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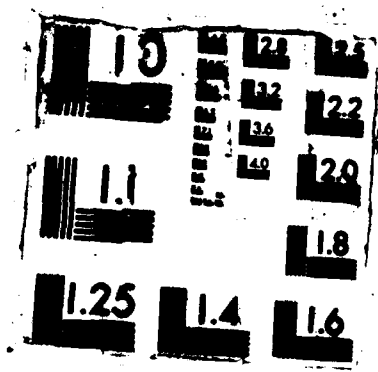
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Cultural Resource Management Report

FINAL REPORT

OF THE PHASE I CULTURAL RESOURCES INVESTIGATION
OF A PROPOSED FLOOD CONTROL PROJECT ALONG THE PEMBINA RIVER,
AT NECHE, PEMBINA COUNTY, NORTH DAKOTA

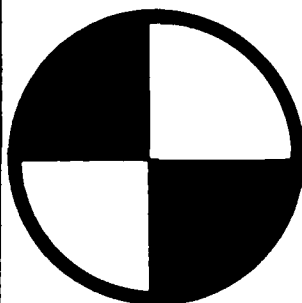
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Date 11-13-86 **For** ST. PAUL DISTRICT, CORPS OF ENGINEERS

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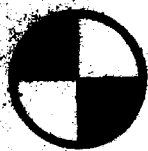
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<p>A phase I cultural resources investigation was conducted for the Neche flood control project in Pembina County, North Dakota, in May, 1986. The project components include a channel cutoff, a borrow area, two new levee sections, and two interior drainage ponds. The study utilized surface inspection, cutbank profiles, subsurface shovel probes, and soil corings, to locate cultural materials. As a result of the inventory, no prehistoric or significant historic sites were recorded. The shovel probes were also negative, indicating a low potential for buried cultural resources. No further archaeological work is recommended at these locations, with one exception. It is suggested that landowner permission be obtained to survey two acres to which Powers was denied access.</p>				
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**FINAL REPORT
OF THE PHASE I CULTURAL RESOURCES INVESTIGATION
OF A PROPOSED FLOOD CONTROL PROJECT ALONG THE PEMBINA RIVER,
AT NECHE, PEMBINA COUNTY, NORTH DAKOTA**

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**U.S. DEPARTMENT OF THE ARMY
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13 NOVEMBER 1986

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**Mervin G. Floodman
Principal Investigator**

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MANAGEMENT SUMMARY

Powers Elevation, Inc. (Powers) conducted a cultural resources study for a proposed flood control project along the Pembina River at Neche, Pembina County, North Dakota. Powers' survey covered several proposed project components, including a cutoff channel, two levee sections, two interior drainage ponds, and a borrow area. The project sponsor is the U.S. Army Corps of Engineers, St. Paul District (Corps). The work was performed under Contract No. DACW37-86-M-0828.

The scope-of-work required a Phase I cultural resources inventory; an intensive, on-the-ground survey of the area, sufficient to determine the number and extent of the resources present and their relationships to project features. The purpose of the investigations was to fulfill the obligations of the Corps in regards to the various federal laws and regulations concerning the management of cultural resources. All historic and archaeological sites within the project area were recorded, and the general nature of those resources assessed. If resources with the potential to provide important information were identified, then this report was to recommend what Phase II testing measures might be warranted to evaluate their significance. The budget for the Phase I inventory was \$3,577.00.

Field work was conducted by Mervin G. Floodman of Powers on May 13-15, 1986. Project methodologies included surface survey, inspection of river cutbanks, subsurface shovel probes, and deeper testing using a soil auger, to locate any cultural sites in the proposed impact areas. No cultural materials were collected; therefore, no laboratory analysis was conducted.

Two limitations were imposed on the study. Due to recent rains, some portions of the project area were very wet and muddy, particularly the areas of the interior drainage ponds. These areas were inspected as closely as possible. Also, approximately two acres within the southern drainage pond area was not surveyed due to lack of landowners permission.

No significant cultural resources were found during the inventory. The limited subsurface shovel probes revealed a low potential for buried resources in the project areas inspected. It appears that no further archaeological work is necessary for this project, with one exception. The two acres within the southern drainage pond area, which were not surveyed by Powers because the landowners denied entry to the property, should be inventoried by the Corps at some later date, after landowner permission has been secured.

Field notes and reports are on file at the St. Paul District, and at the Powers, Denver office. Original site photographs are on file at the State Historical Society of North Dakota in Bismarck. Photographic negatives are filed at Powers. No artifacts were collected.

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1.0 INTRODUCTION

The St. Paul District of the U.S. Army Corps of Engineers (Corps) has proposed a flood control project for the town of Necho, Pembina County, North Dakota (Figure 1). Archaeologically, this area is within the Northeastern Plains prehistoric cultural region. Environmentally, it is located within the Red River Valley of the Central Lowlands.

The Corps awarded Contract No. DACW37-86-M-0828 on April 4, 1986 to Powers Elevation, Inc. (Powers) to conduct a Phase I cultural resources inventory of the proposed flood control project at Necho. This investigation was to serve several purposes. It was to be a planning tool for the Corps to meet their federally mandated obligations in regards to the management of cultural resources. This report fulfills both the letter and spirit of the law by identifying all cultural resources within the project area, noting which significant sites may require additional work, assessing the impacts of the project on any resources, and providing a scientific reference for future professional studies. The goals of the survey were to: 1) provide data adequate to assess the general nature of the sites present; 2) provide recommendations for additional testing of those resources that may contain cultural and scientific information; and 3) detail time and cost estimates for Phase II testing, if such additional work was deemed necessary. The survey recorded all sites, structures, and objects of historical, architectural or archaeological significance within the project area, as outlined by the Corps' scope-of-work (U.S. Department of the Army 1986).

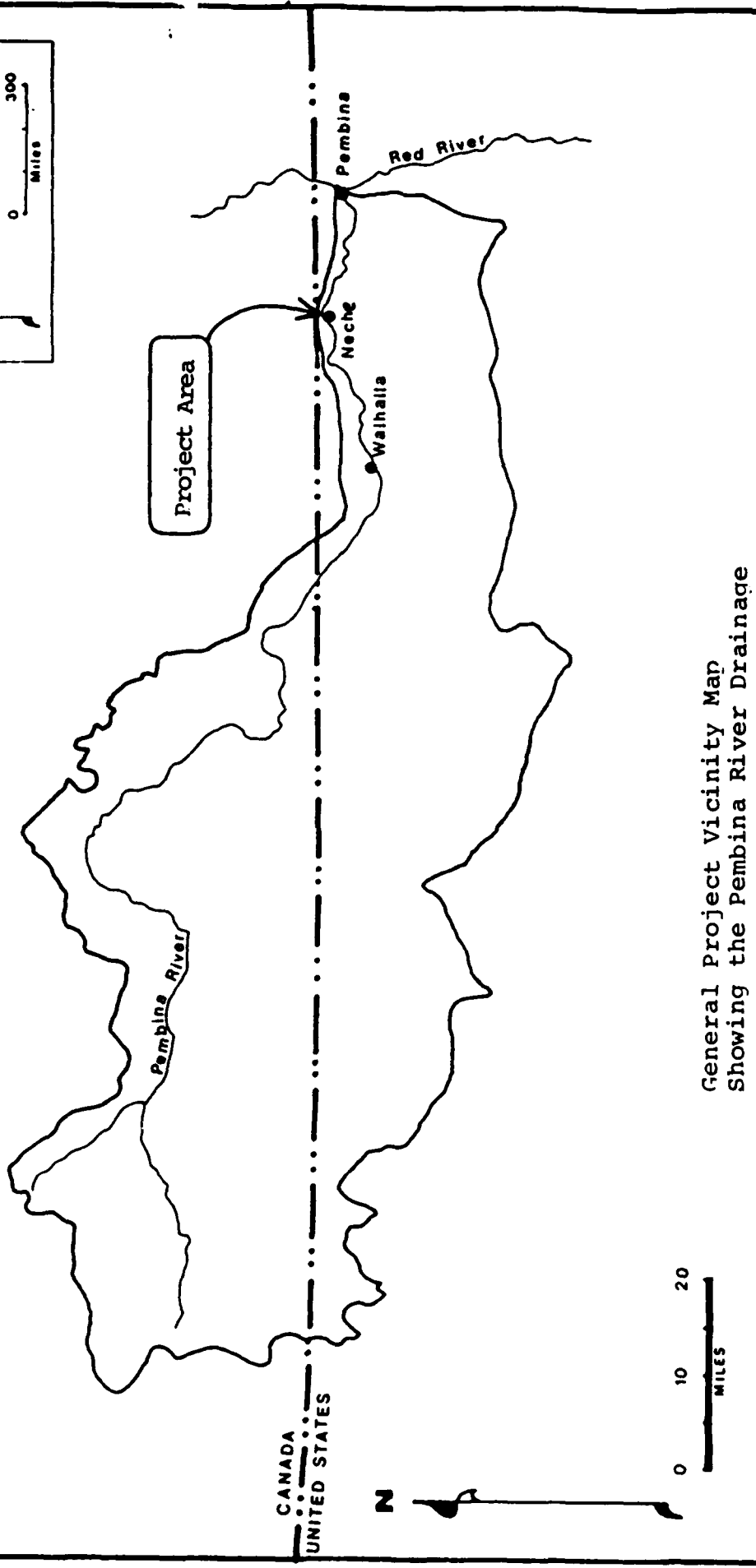
The flood control project for Necho is intended to protect the town from repeated flooding of the Pembina River. It includes upgrading of existing levees, building additional levee sections, construction of a cutoff channel on the river, excavation of a large borrow area, and construction of two interior drainage ponds. The project components are described below:

- 1) The cutoff channel will involve construction in an area that is approximately 850 ft long (about 260 m) and a maximum of 180 ft wide (about 55 m) across a meander loop of the Pembina River. The survey was to cover approximately 3.5 acres (about 1.42 hectares).

- 2) One new levee section is to extend south from near the Pembina River, adjacent to State Highway 18, eventually intersecting an existing levee. The proposed alignment is about 2,100 ft long (about 640 m) and a maximum of 200 ft wide (about 60 m). The survey was to cover approximately 9.6 acres (about 3.89 hectares).

Neché Flood Control Project

Figure 1



3) The other new levee section is to begin at the same starting point as Component #2 and extend to the southeast across meander loops of the river to intersect an existing levee. It is about 2,300 ft long (about 700 m) and 70 ft wide at its maximum (about 21 m). The survey was to cover approximately 3.7 acres (about 1.5 hectares).

4) Two interior drainage ponds are planned. One is at the southern end of the project area, and the second is in the southeastern corner of Neche. The first is about seven acres in size (about 2.83 hectares) while the other is about 5.5 acres (about 2.23 hectares).

5) A borrow area is planned between a river meander along the new southeastern levee (Component #3) in the north part of town. About seven acres will be surveyed at this location (about 2.83 hectares).

The various project components and areas surveyed are detailed in Figures 2 and 3. All work was confined to Section 31, T.164N., R.53W., primarily in the W1/2.

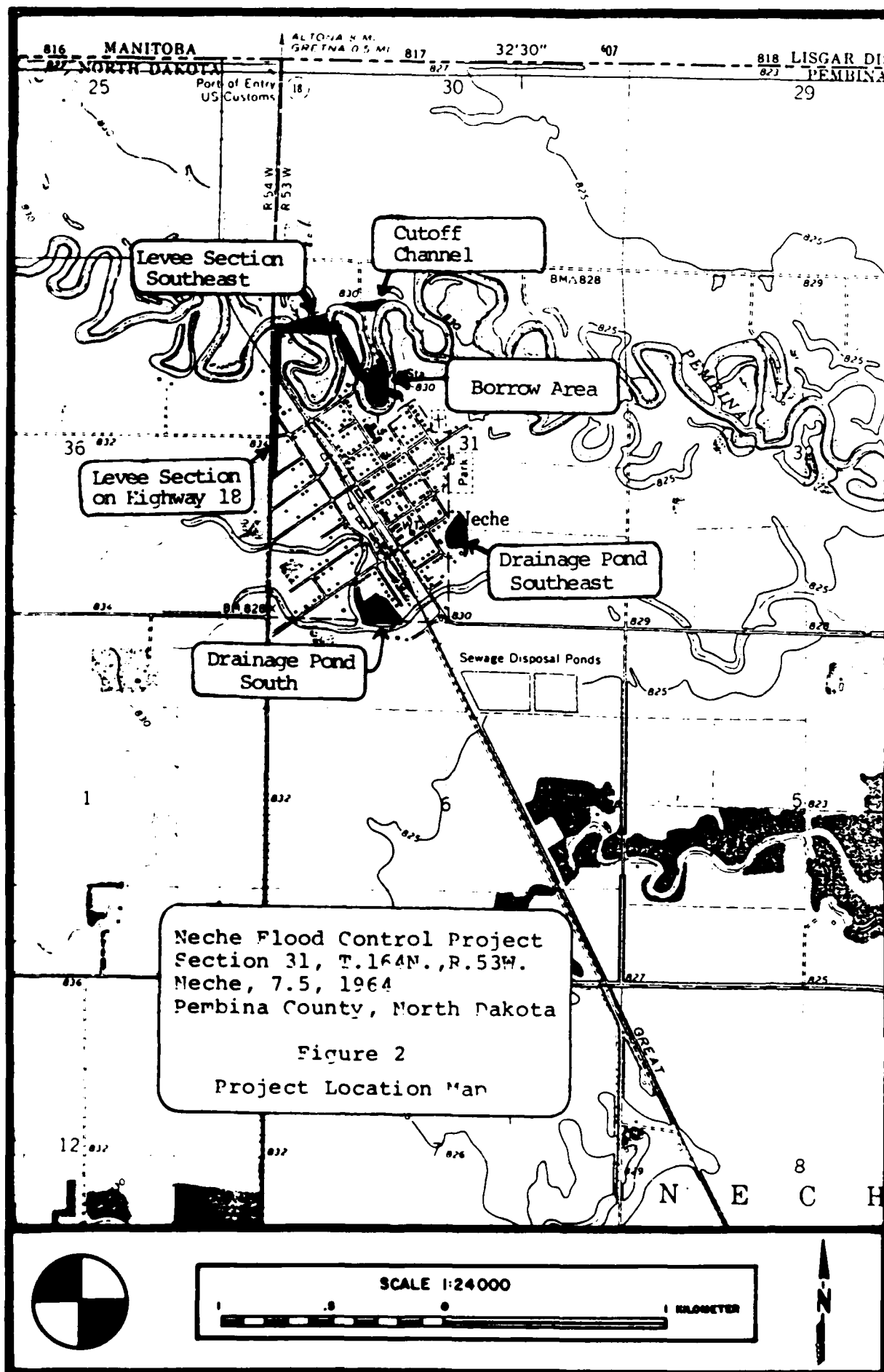
The Phase I cultural resources investigation was conducted by Mervin G. Floodman of Powers. Field work was performed over a three day period between May 13-15, 1986. All records from these investigations are curated at the Denver office of Powers. Project methodologies included surface survey, inspection of river cutbanks, excavation of subsurface shovel probes, and deeper testing using a soil auger, to locate any cultural sites in the impact areas. The report which follows presents a summary of previous archaeological and historic studies in the project area, describes the local environment, gives a brief theoretical and methodological overview, describes the field and laboratory methods, presents the survey results, and gives the evaluation, conclusions, and recommendations for the treatment of the cultural resources within the project area.

2.0 PREVIOUS ARCHAEOLOGICAL AND HISTORIC STUDIES

This section will discuss previous work in the region and present a cultural overview for the Pembina River Valley.

2.1 LITERATURE REVIEW

A files search was conducted on April 24, 1986, by Nick G. Franke, at the State Historic Preservation Office of the Division of Archaeology and Historic Preservation of the State Historical Society of North Dakota (SHSND) in



Neché Flood Control Project

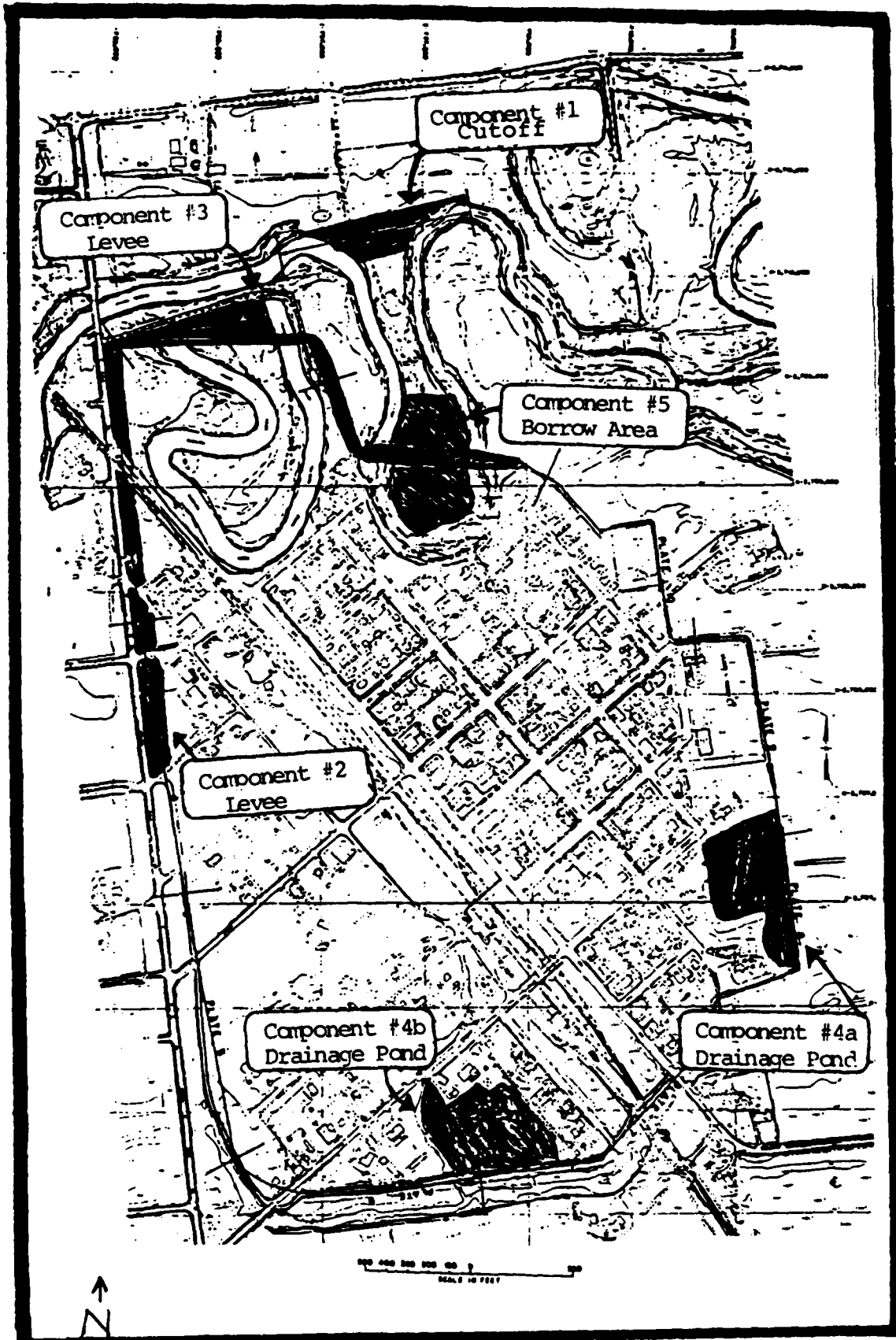


Figure 3
Project Components

Bismarck, North Dakota. The National Register of Historic Places (NRHP) listings, the site location catalog, the survey report catalog, the uncataloged survey reports, and the relevant cataloged survey reports were consulted. The files search was conducted for Section 31, T.164N., R.53W., Pembina County, North Dakota.

One site lead was reported in the project area and reports of two files searches were on file. The unnumbered site lead consists of the "Old Red Hall" reported by Tweeton (1978) for the North Dakota Legislature Council Regional Environmental Assessment Program (REAP), in the SW1/4 of Section 31. The reported files searches included an inventory of known historic sites on the Pembina River between Neche and Pembina, North Dakota by Franke (1976) and the Pembina River Cultural Resources Literature and Records Search by Schneider (1976).

On November 12, 1986 an extended files search was conducted by Robert Cordova at the SHSND for the sections directly adjacent to the project area, including Sections 5 and 6, T.163N., R.53N.; Section 1, T.163N., R.54W.; Sections 29, 30 and 32, T.164N., R.53W.; and Sections 25 and 36, T.164N., R.54W. The only sites listed in this area were historic in nature, in T.164N., R.54W. In the W1/2 of Section 25 the U.S. Customs House at Smugglers Point was recorded by Tweeton (1978) for REAP. In the SE1/4 of Section 25 Maisel (1978) recorded a site lead for 32PBX, a post office and location of the Metis Trail. In the N1/2, SE1/4 of Section 25 the townsite of Ottention was recorded by Raab (1976) as noted in the Andreas Historic Atlas (1884). In the NE1/4 of Section 36 Tweeton (1978) for REAP recorded a Hudson's Bay Company post. It should be noted that none of these sites are within the project area, and none will be affected by the proposed flood control work at Neche.

There have been no on-the-ground cultural resources surveys conducted in the study area, and no previously recorded sites are known. Therefore, the cultural resources for this area can only be inferred from other investigations in the region.

The Pembina River Valley in North Dakota has not been intensely examined by archaeologists. In 1975 Moorehead State College conducted a preliminary field survey, under a contract with the St. Paul Corps, of the Pembina Mountains in Cavalier County (Ames 1975). This study concentrated on aboriginal prehistoric remains, and recorded 17 sites. Also for the St. Paul Corps, Historical and Archaeological Surveys, Inc. performed a literature review, in 1980, which summarized previous data and added an historical context for the region

(Good et al. 1980). In 1981 the University of South Dakota was hired by the St. Paul Corps to conduct an extensive literature and selected field survey of portions of various project alternatives for a flood control program on the Pembina River in Cavalier and Pembina Counties, North Dakota. This study surveyed approximately 2,000 acres upstream from Neche and recorded 42 new sites and 13 isolated finds (Brown et al. 1982).

2.2 CULTURAL OVERVIEW

Using data abstracted from Brown et al. (1982) it is possible to present a cultural overview for the Pembina River Valley. This region was included within Wedel's (1961) Northeastern Plains Periphery cultural sphere. Since archaeological excavations on the Pembina River in North Dakota have been limited, results of investigations in Minnesota, Manitoba and elsewhere on the Northern Plains has been utilized to discuss prehistoric and historic patterns.

2.2.1 Prehistoric Background

The prehistory of the Northeastern Plains can be classified by a series of chronological/cultural periods, further subdivided into phases. This framework was borrowed from Willey (1966) McNeish (1958), Syms (1977), Frison (1978) Reeves (1983a) and Brown et al. (1982).

2.2.1.1 Paleo-Indian Period

The Paleo-Indian period on the Great Plains is represented by what Willey (1966) called a "Big Game Hunting Tradition." This was an adaptive strategy developed for the grassland environment of the late Pleistocene, where aboriginal people used spears tipped with large lanceolate shaped projectile points to hunt now extinct forms of megafauna. Archaeologists have defined three major complexes for the Paleo-Indian period: Clovis, Folsom and Plano. The Clovis complex has been dated as early as 9350 B.C. at the Dent site in Colorado, where distinctive fluted, concave base, Clovis style points were found in association with a mammoth kill (Frison 1978). A Clovis point was reported from site 32PB25 in the Pembina River Valley of North Dakota (Brown et al. 1982).

The Folsom complex is characterized by fluted projectile point forms smaller than Clovis, wider at the midsection, with fine edge retouch and ears at the concave base. At the Lindenmeier site in Colorado, Folsom points were found associated with a kill of extinct forms of bison, dated

to 8900 B.C. (Frison 1978). Folsom points have been found in Manitoba (Brown et al. 1982).

The Plano complex is known from a number of non-fluted, long, narrow point forms. It includes such types as Agate Basin, Hell Gap, Alberta, and Cody. At the type site in Wyoming, the Agate Basin culture was dated to 8480 B.C., while at the Casper site in Wyoming the Hell Gap culture was dated to 8110 B.C. (Frison 1978). For Manitoba, Pettipas (1985) has grouped Agate Basin and Hell Gap into a Sister's Hill phase and Alberta and Cody into a Horner phase. It is Pettipas' contention that the first Plano people entered Manitoba circa 8000 B.C. and used stemmed points similar to the Horner phase. After the decline in the level of glacial Lake Agassiz around 7300 B.C., they were displaced by people using leaf-shaped lanceolate points similar to the Sister's Hill phase. Most of the Plano points known for the Pembina River Valley come from finds in Manitoba (Brown et al. 1982). In North Dakota, the only excavated Paleo-Indian site, at the Knife River quarries in Dunn County, produced Scottsbluff and Alberta points dated from ca. 7000 to 6000 B.C. (Schneider 1984).

2.2.1.2 Plains Archaic Period

Both Willey (1966) and Frison (1978) used the term Plains Archaic to refer to the cultural stage after the Pleistocene, when the megafauna became extinct, and subsistence strategies switched to a more varied pattern of hunting and gathering. This period is characterized by dart points used with an atlatl. Frison's (1978) Early Plains Archaic period coincides with what Mulloy (1958) has described as a gap in the archaeological record on the Northern Plains during the altithermal climatic episode. Reeves (1973) believes that there may not have been a cultural hiatus during the altithermal, and includes with his Early Middle Prehistoric I period archaeological manifestations from that time. During this period appeared large side notched points, which Reeves classifies with the Mummy Cave complex, dated to 5680 B.C. at the type site in northwestern Wyoming, and 3460 B.C. at Head-Smashed-In in Alberta. From the Northeastern Periphery, the Swan River site and Itasca Bison kill can be placed in this period.

Reeves' (1973) Early Middle Prehistoric II period is noted by the appearance of lanceolate, basally notched, and stemmed dart points. This includes both the Oxbow complex, dated to 3250 B.C. at the type site in Saskatchewan, and the McKean complex, dated at 1500 B.C. at the Grey-Taylor site in Wyoming. Frison (1978) used the McKean complex, including the McKean, Duncan and Hanna point types, to mark his Middle Plains Archaic period. Site 32CV204 on the Pembina River in North Dakota produced an Oxbow point. McKean sites

are known from the Rock Lake area at the headwaters of the Pembina River in Canada (Brown et al. 1982). The earliest levels at the Lockport site and Cemetery Point site, near Winnipeg, contained McKean materials, and have been included in the Whiteshell and Larder phases (McNeish 1958).

Frison's (1978) Late Plains Archaic period is matched by Reeves' (1973) Late Middle Prehistoric period for the Northern Plains. One of the major cultural phases of this period is called Pelican Lake, with a distinctive corner notched projectile point type. At Head-Smashed-In the Pelican Lake levels were dated from 1092 B.C. to A.D. 25 (Reeves 1983b). It is Reeves' (1983a) contention that Pelican Lake was an outgrowth of the McKean complex, and was a phase within the Tunaxa cultural tradition. Pelican Lake points were found at the Calf Mountain site in the Pembina Mountains of Manitoba and at 32PB8 in North Dakota (Brown et al. 1982).

Virtually overlapping with Pelican Lake was the Besant phase, which Frison described as a sophisticated bison hunting culture. At the Ruby site in Wyoming Besant levels were dated from A.D. 150 to A.D. 280 (Frison 1978). Reeves (1983a) speculates that Besant technologically evolved from the Oxbow complex, and spread westward from the Northeastern Periphery of the plains as part of the Napikwan cultural tradition. Johnson (1977) has argued that Besant should be considered a phase within the Plains Woodland cultural tradition, based on the recovery of ceramics with Besant points. At the Abraxas site, in western North Dakota, Besant points were found in association with Woodland pottery and radiocarbon dated from 91 B.C. to A.D. 60 (Floodman et al. 1983). Besant also includes a burial mound complex, called Sonota, found in the Middle Missouri area. Syms (1977) thought that the Zeb Montrov Site in the Pembina River Valley was Sonota-like. The Besant phase is also represented at the Avery site at the headwater of the Pembina River in Manitoba. A Besant point was found at 32CV204 on the Pembina River in North Dakota (Brown et al. 1982).

2.2.1.3 Late Prehistoric Period

Both Frison (1978) and Reeves (1983a) use the Late Prehistoric period to denote the change in projectile point technology evident after the introduction of the bow and arrow on the Northern Plains. One of the earliest Late Prehistoric cultures is called Avonlea, characterized by small, triangular, side-notched projectile points (Kehoe and McCorquodale 1961). At Head-Smashed-In the Avonlea levels begin about A.D. 150 (Reeves 1983b). Ceramics are now well documented for the Avonlea phase, such as the specimens found at the

Goheen site in Montana (Fraley and Johnson 1981). The Long Creek site in southeastern Saskatchewan yielded pottery from Avonlea levels, as well. Reeves (1983a) sees Avonlea as related to the Pelican Lake phase and a continuation of the Tunaxa cultural tradition. Syms (1977) states that Avonlea points are rarely found in southwestern Manitoba. In the Saskatchewan Basin, Avonlea terminates around A.D. 700, when it was replaced by the Blackduck horizon.

The Blackduck horizon was a Late Woodland culture, originating in the southern boreal forest, identified mainly on the basis of ceramic styles. McNeish (1958) grouped Blackduck components within his Manitoba focus. Radiocarbon dates from Blackduck sites in Manitoba, Ontario, and Minnesota range from A.D. 480 to A.D. 1775. Blackduck ceramics were found at the Avery site in the Pembina River Valley in Canada. Blackduck pottery was also recovered at sites 32CV204 and 32CV217 on the Pembina River in North Dakota. While McNeish thought that the Blackduck culture represents the proto-historic Assiniboin, others have identified it with the Cree or Ojibwa tribe (Syms 1977).

Some Late Woodland complexes in the Northeastern Periphery have been identified primarily on the basis of the excavation of burial mounds. One such culture, known as the Arvilla Burial complex, includes sites in the Red River Valley of North Dakota. These sites cluster mostly on the ancient beaches of glacial Lake Agassiz. Attributes of the complex consist of the presence of a linear or circular mound, with subsurface pits, associated with side and corner notched projectile points, and objects of bone, antler, animal teeth, and shell. Dates from two Minnesota Arvilla mounds are A.D. 600 and A.D. 785 (Syms 1977). Arvilla sites include include Calf Mountain, Sims, Star Mounds, Sykes and McKay in Pembina River Valley of Manitoba. Wedel (1961) thought the mound builders in this region were Siouxian, and noted that Arvilla closely resembled Blackduck. Syms (1982) favored an argument that Arvilla was related to proto-historic Algonquian populations.

West of the Red River is a group of mounds classified as the Devils Lake-Sourisford complex. Some of the Arvilla sites on the Pembina River in Manitoba share traits with the Devils Lake-Sourisford complex. Syms (1977) suggests a range of A.D. 1000 to 1600 for this culture.

Another Late Woodland culture identified mainly on the basis of pottery is called the Selkirk horizon. McNeish (1958) believed that the Selkirk culture post-dated Blackduck and was representative of the proto-historic Cree. Radiocarbon dates from Selkirk sites in Ontario, Manitoba, and Saskatchewan range from A.D. 1190 to A.D. 1650 (Syms 1977). At the

time of Euro-American contact, around the mid-eighteenth century, Native American tribes occupying the project vicinity included the Cree, Assiniboin, Plains Ojibwa, Sioux and Chippewa.

2.2.2 Historic Background

The historic era, after Euro-American contact, can also be discussed in terms of thematic periods. The history of this region is summarized briefly from Robinson (1966) and Brown et al. (1982).

2.2.2.1 The Fur Trade

The Missouri River Basin and Red River Valley were both originally part of France's empire in the New World. In 1727 Pierre Gaultier de Varennes, the Sieur de la Verendrye, was given the authority to establish a string of fur trade posts west from Lake Superior, to engage the local tribes in commerce and strengthen the claims of New France in the face of competition from Britian's Hudson's Bay Company. In 1738, seeking to make contact with the Mandans, and learn a route to the legendary Sea of the West, La Verendrye left Fort La Reine, his western-most post on the Assiniboine River, and was guided to the Missouri River in North Dakota by Assiniboin Indians. On this journey he crossed the Pembina River, passed by the Turtle Mountains, and traversed over the plains to the Mandan villages near the mouth of the Heart River. After a short stay, Verendrye returned to Canada, but the journal of his expedition represented the first written record of people of European descent penetrating into what is today North Dakota. In 1742 two of his sons returned to the Mandans. They then began their own search for a western flowing river, traveling perhaps as far as the Big Horn Mountains (Smith 1980). While the Verendrye family did not find their dreamed of passage to the Pacific, they did open the door for French Canadian trade with the tribes of North Dakota.

Political conflict over which European countries controlled portions of North America was resolved by the Peace of Paris in 1763. At that time France ceded Canada to Great Britian, while the Missouri Basin and the Territory of Louisiana went to Spain. In 1800 Spain gave Louisiana back to France, who then sold it to the United States of America three years later. With the end of France's monopolistic trade policies, after the British took over Canada, there was fierce competition in the fur trade. The British government had given the Hudson's Bay Company, created in 1670, the exclusive right to trade within the Hudson's

Bay drainage. But this did not apply to the western frontier of Canada, where they were challenged by a group of Montreal traders who formed the North West Company in 1783.

The Red River Valley was part of the Canadian frontier until 1818, when the international border was defined as the 49th parallel. Thus, the first traders to explore this region were Canadians. In 1783 Robert Grant of the North West Company founded Fort Esperance on the Qu'Appelle, a tributary to the Assiniboine River, to serve as headquarters for the Red River District. That same year the North West Company erected Pine Fort further down the Assiniboine, below the mouth of the Souris River, to control trade with the Mandans on the Missouri. This post was closed in 1794 when it was out-competed by Brandon House, built at the mouth of the Souris by the Hudson's Bay Company (Provo 1984).

The first trading post at the mouth of the Pembina River was established in 1797 by Charles Jean Baptiste Chaboillez for the North West Company. The Hudson's Bay Company responded by erecting a post a mile north of it. Brown et al. (1982) thought that site 32PB12 may be related to this post. Chaboillez's post was abandoned after a season or two, and replaced by a new North West Company post in 1801, managed by Alexander Henry. From this post Henry traded with the Chippewa, Cree and Assiniboinis.

In 1812 Thomas Douglas, Earl of Selkirk, attempted to establish a colony of Scottish highlanders on a land grant he received at the junction of the Red and Assiniboine River, where Winnipeg stands today. The idea was to create an agricultural community to supply the interior posts of the Hudson's Bay Company, but the North West Company saw the land grant as a means of disrupting their trade. While the Selkirk colonist farmed in Manitoba, they built winter quarters at Pembina, near the North West post, and hunted buffalo in the region. Tensions between the North West Company and the colony mounted until 1816, when events climaxed with the so-called "Massacre at Seven Oaks," where metis were incited by the North West Company to attack the colony. The death of 20 settlers apparently sobered both sides and in 1821 an agreement was reached merging the two companies and ending the rivalry. In 1834 Selkirk's heir returned the land grant to the Hudson's Bay Company.

Selkirk sent Roman Catholic missionaries to the Red River Valley, and in 1818 Father Severe Dumoulin established a church at Pembina. In 1923 Major Stephen H. Long, of the U.S. Army Corps of Topographical Engineers, came to the area to define the international boundary between the United States and Canada, along the 49th parallel as agreed

by the treaty of 1818. It was discovered that Pembina actually was located on the American side of the boundary. The settlers were thus forced to move north into Canada, and by 1836 Pembina was virtually abandoned.

With the definition of the international border, the Hudson's Bay Company was discouraged from trading south of the 49th parallel. However, some Canadians moved into the United States, forming the Columbia Fur Company with American partners, and gained control of the fur trade from Lake Superior to the Missouri River. In 1827 the Columbia Fur Company was absorbed by the American Fur Company. For a time the Hudson's Bay Company kept the American Fur Company out of the Red River Valley through payment of a fee. This agreement was abrogated in 1842 when the Chouteau family of St. Louis took control of the Upper Missouri outfit of the American Fur Company. In 1844 they sent Norman W. Kittson to build a post at Pembina. Kittson conducted commerce with the Chippewa, metis, and free traders north of the border. He helped break the monopoly of the Hudson's Bay Company by employing the metis to transport goods between Pembina and St. Paul using their so-called Red River carts. With Kittson's presence, Pembina once again came to life.

One of the consequences of the fur trade in the Red River Valley was the emergence the metis; a distinct ethnic group derived from the intermarriage of whites with local Indians. By the 1850s they constituted the majority of the regional population. The U.S. census in 1850 counted 1,116 people living at Pembina. Most of them were metis, together with some free white traders who had formerly been employed by the North West Company, and emigrants for the Selkirk colony. The metis did a little farming, but were best known for their buffalo hunts, and for their cart trade (Robinson 1966).

The metis cart trade trails became the transportation link between the Red River Valley and the Mississippi River Valley. One trail went up the west side of the Red River from Pembina to Lake Traverse, then followed the Minnesota River to Traverse des Sioux, where the carts were unloaded onto keel or steamboats for shipment to Mendota. Another trail led to St. Paul through the Sauk Valley. An alternative route, known as the "Ridge Trail," went up the Pembina River along its north bank to St. Joseph (Walhalla). There the trail split, with one branch heading southeast to St. Paul, while the other continued west to the buffalo hunting grounds around Devils Lake. Brown et al. (1982) thought that site 32PB19 could be a metis campsite.

After a flood in 1851, Kittson moved his trading post to St. Joseph. Nearby was the post of the independant metis trader Antoine Blanc Gingras. Gingras' house and trading post has been recorded as site 32PB101 (Brown et al. 1982). Also at St. Joseph, the Catholic Father George Beloint, who had been driven out of the Selkink colony for siding with the metis against the Hudson's Bay Company, established a mission for his metis followers. Kittson quit the fur trade in 1854, and his place at Pembina was taken by Joseph Rolette. Charles Cavileer kept the Kittson post at St. Joseph until 1859, when it was purchased by Charles Grant and Charles Bottineau. These men also built a trading post at Point Michael, recorded as site 32PB31. When the partnership broke up a few years later, Bottineau maintained the St. Joseph post, while Grant used the Point Michael place. Later Bottineau would become a large scale farmer in the region, and Grant converted his house and trading post into an inn (Brown et al. 1982).

2.2.2.2 The Transporation Frontier

In 1849 the U.S. Congress created the Territory of Minnesota, stretching as far west as the Missouri River, and including the Red River Valley. Pembina and St. Joseph soon became the hinterland for St. Paul, especially with the trade carried on by the metis. In 1857 the Selkirk colony in Canada became tied to St. Paul, when George Simpson, governor of the Hudson's Bay Company, arranged to have goods imported to Canada by way of St. Paul, using Red River carts. The business community of St. Paul sought to improve this method of transportation, and in 1859 they started steamboat service on the Red River, between the mouth of the Sheyenne and Fort Garry (later the site of Winnipeg) in modern Manitoba. The steamboat was connected to St. Paul by way of a stage and freight line from St. Cloud to Fort Abercrombie, which had been erected in 1858 on the Red River north of Wahpeton. The first permanent settlements in the region were at Sioux Falls and Yankton, and in 1861 they pushed through the creation of the Territory of Dakota.

Travel to the Red River was temporarily disrupted by the Santee Sioux uprising of 1862. After killing several hundred white settlers in Minnesota, the Indians fled west to the Devils Lake region, pursued by U.S. Army troops under the command of Henry Sibly. Meanwhile, General Albert Sully took troops up the Missouri, engaged the Indians at Whitestone Hill, in September, 1863, then retired to Fort Pierre in South Dakota. The following year Sully built Fort Rice, then returned to the field, chased the Indians through the badlands of North Dakota, fought a battle at Killdeer Mountain, and followed the Yellowstone to its mouth. Going

down the Missouri he stationed men at Fort Union and Fort Berthold. In 1867 the Sisseton, Wahpeton and Yanktonais Sioux were settled on a reservation at Devils Lake, overseen by Fort Totten. The Cheyenne River and Grand River Agencies were established in 1868-1869 for the Teton Sioux. Several years before this, in 1863, the Chippewas had ceded their lands in the Red River Valley. The Chippewas were eventually settled on the Turtle Mountain Reservation. Nevertheless, in 1870 the U.S. Army built Fort Pembina to protect that region.

In 1869 the Hudson's Bay Company transferred the Selkirk colony to the Dominion of Canada, and the following year the province of Manitoba was created. At the same time, the first railroad, the St. Paul and Pacific, was extended from St. Paul to the Red River at Breckenridge. In 1871 another railroad, the Great Northern, reached the Red River at Moorehead. With the opening of Manitoba to settlement, and railroad connections to the Red River, steamboat traffic between the United States and Canada increased. In 1874 Kittson, James Hill, and associates, including the Hudson's Bay Company, founded the Red River Transportation Company and monopolized steamboat commerce on the river.

The arrival of the railroads sparked the permanent settlement of the Red River Valley. In 1871 the stage line was extended from Georgetown to Pembina and Winnipeg, and the federal government opened a land office at Pembina and surveyed townships at Fargo and Wahpeton. Many of the first homesteaders to stake claims in this region were of Norwegian stock, crossing over from Minnesota. Both the Northern Pacific Railroad and the Dakota Territory promoted settlement.

2.2.2.3 Agricultural Development

It was the emergence of Minneapolis as a flour milling center and the expansion of railroads into North Dakota, together with the creation of bonanza farms in the Red River Valley, which resulted in what historians refer to as the Great Dakota Boom after 1878. Minneapolis millers in the 1870s used new methods to become the most important flour producers in the United States. To furnish the mills of Minneapolis, the agricultural hinterland of North Dakota was exploited. At the same time, the owners of the Northern Pacific Railroad initiated the disposal of their land in the Red River Valley to capitalists who put together huge farms, mainly operated to grow wheat. In all, there were 91 bonanza farms established by 1885, each with more than 3,000 acres. In 1878 the St. Paul and Pacific was acquired by a consortium headed by James J. Hill, who reorganized it a year later as the St. Paul, Minneapolis, and Manitoba.

The Manitoba then went through a period of expansion, one line being extended down the Red River Valley from Fargo to Neche in 1882. The railroads actively promoted this newly opened country, bringing in thousands of new emigrants. As the land boom peaked, in 1882, some 40,000 people came to the Red River Valley. The population of North Dakota climbed from 37,000 in 1880 to 191,000 by 1890. Many of these, 43% in fact, were foreign born; most coming from Norway and Canada (Robinson 1966).

By 1886 the boom was over. Many of the bonanza farms had been founded as speculative ventures, and when the excitement died down, with the decline in wheat prices, enthusiasm for North Dakota dampened. Some of the newcomers to the region abandoned their homesteads and moved elsewhere. But not before North Dakota was transformed, gaining statehood in 1889.

It was during the Great Dakota Boom that the project area was permanently settled. The community of Hyde Park, for example, was founded after 1879. Many of the homesteaders there originated from England and Scotland, and came to North Dakota from Canada. A number of Norwegians and Icelanders homesteaded around St. Joseph, later changing the name of that community to Walhalla. Brown et al. (1982) cite 12 sites as examples of historic agricultural settlements dating from this period.

3.0 ENVIRONMENTAL BACKGROUND

Pembina County is located in the extreme northeastern corner of North Dakota. The northern boundary of the county is formed by the international United States-Canadian border. North of the boundary is the Canadian province of Manitoba. The eastern boundary is the Red River of the North which separates North Dakota from the state of Minnesota. The city of Neche is on the south bank of the Pembina River, which flows east to the Red River. Neche is located one mile south of the Canadian border and about 18 miles west of the Minnesota border.

3.1 PHYSIOGRAPHY AND TOPOGRAPHY

Most of Pembina County is located within the Red River Valley of the Central Lowland. The term Central Lowland refers to the area covered by tall grass prairie prior to settlement, as opposed to the Great Plains region of the western portion of the state which was covered by short to medium grass prairie (Bluemler 1977).

The Red River Valley is a plain occupying a strip of land about 40 miles (65 kilometers) wide on the eastern margin of North Dakota. It was formed by sedimentation on the floor of glacial Lake Agassiz. More than 95% of the area is gently sloping (slopes of less than eight percent) and local relief is less than 25 ft (about 8 m) in most areas.

Along the western edge of Pembina County lies the Pembina Escarpment. This steep, glacially modified escarpment marks the boundary of the Red River Valley at the western edge of glacial Lake Agassiz and the higher glaciated plains. The Pembina Escarpment is most evident in the northern portion of the county, where it rises some 500 ft (150 m), but becomes less pronounced to the south (Blumle 1977).

Only the very southwestern corner of Pembina County contains glaciated plains (Blumle 1977). This is the area around the Edinberg Moraine. These plains consist of rolling, glaciated landscape. More than 80% of the area is gently sloping with local relief less than 100 ft (30 m) in most areas, but ranging from 100 to 300 ft (30-90 m) in places.

The Pembina Delta lies in the northwestern portion of the county and parallels the Pembina Escarpment. The delta was formed as the Pembina River emptied into glacial Lake Agassiz during its period of higher water. As the lake levels began to drop, beaches were formed by wave action. These beach lines are sandy and gravelly in the west, and finer textured in eastern portions of the county. About 100 to 200 ft (30-60 m) of lake deposit covers the glacial deposits over most of the county (U.S. Department of Agriculture 1977). A map of the major physiographic zones in Pembina County is found in Figure 4.

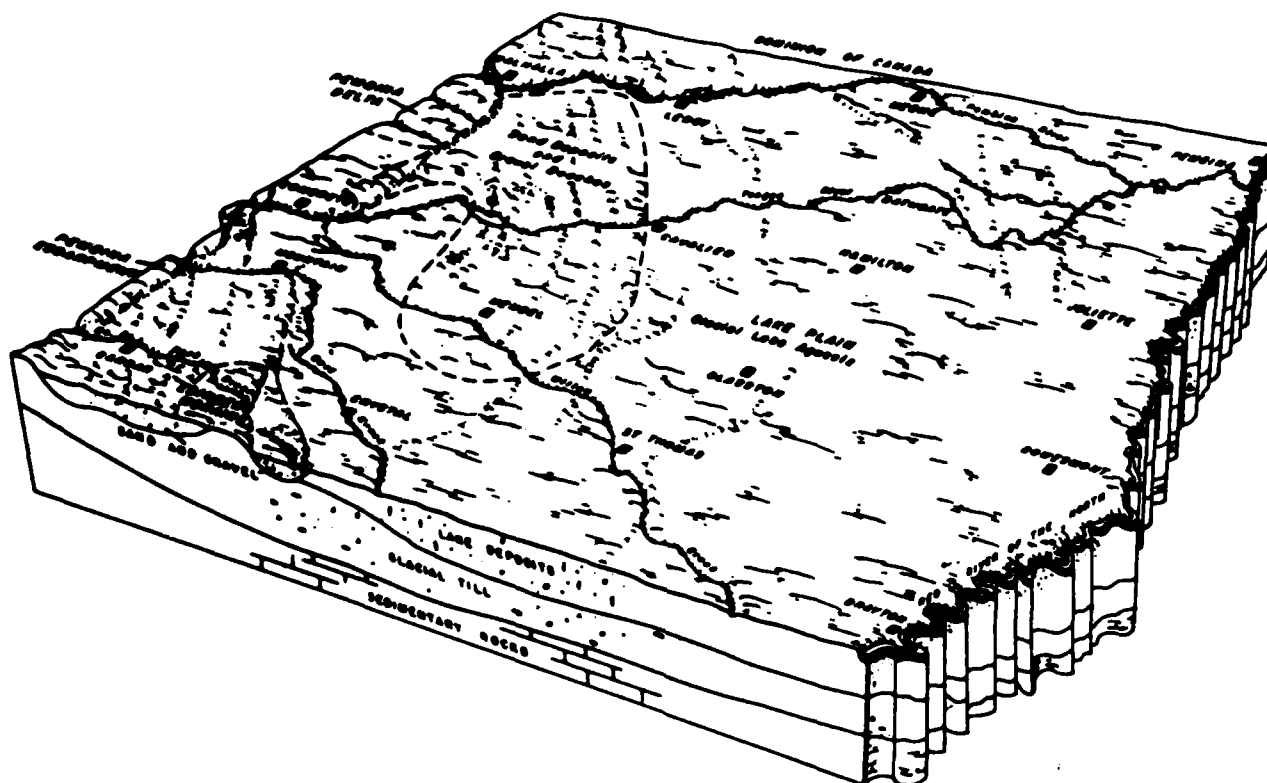
3.2 GEOLOGY

The ancestral Red River Valley was initiated several million years ago as a narrow, shallow valley whose axis was several miles east of its current location in Minnesota, where the Dakota Group sandstone was exposed at the surface. The upward movement of ground water helped initiate the valley in the area of springs (see Figure 5A).

With time, the ancestral Red River eroded its way to the Precambrian rock of the Canadian Shield. The river then migrated laterally to the west where the Precambrian rock lay at a greater depth (see Figure 5B). As it moved westward, it carved away the softer shale and sandstone. The west wall of the valley was marked by springs where the Dakota Group aquifers and, as erosion continued, the Lower Paleozoic aquifers, were exposed (Figure 5C). Seepage

Neché Flood Control Project

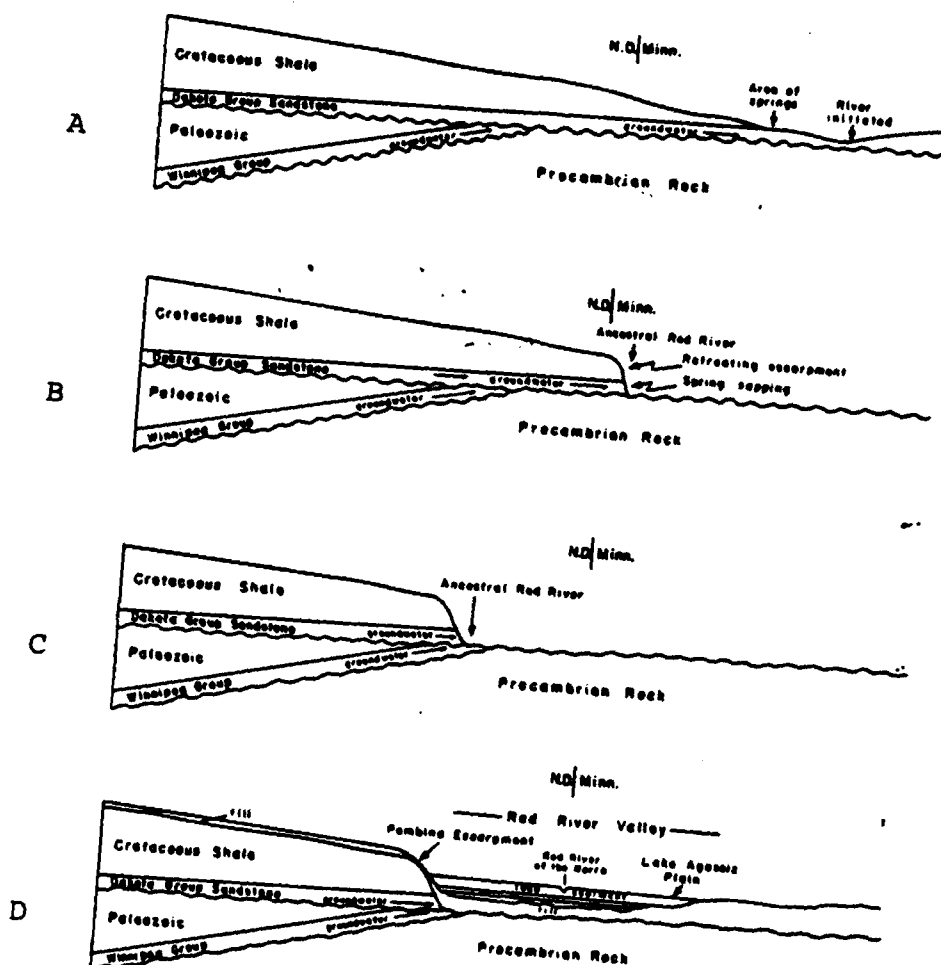
Figure 4



Physiographic Features of Pembina
County (U.S. Department of Agriculture
1977:106).

Neché Flood Control Project

Figure 5



Diagrams illustrating the formation of the Red River Valley. The upward movement of artesian groundwater helped to initiate a valley in the area of springs (top diagram). The river cut down to the hard, Precambrian rock, then shifted its course westward as it eroded away the Cretaceous shale and sand forming the Pembina Escarpment as it did so (second and third diagrams). When glaciers deposited a layer of till over the area, the upward flow of groundwater was sealed off and the river erosion ended (lower diagram). Lake Agassiz sediment now covers the Red River Valley and the modern Red River of the North flows on top of the lake plain. Adapted from Bluemle 1977, p.9.

from these springs transported sediment to the river. This resulted in the formation of the steep-sided Pembina Escarpment which became increasingly higher as it migrated westward (Figure 5D).

The face of the Pembina Escarpment was eroded and steepened by glacial ice during the Pleistocene Epoch. The river valley was filled by melting waters of the glaciers as they retreated. The modern floor of Red River Valley was formed by the sedimentation of the most recent meltwater lake to occupy the valley, glacial Lake Agassiz. The modern Red River of the North now flows on top of this lake plain (Bluemler 1977). Glacial Lake Agassiz deposited some 100 feet of clay and silt on the lake bed. Along the margins of the former lake, wave action formed beaches of glacial till and other near-shore deposits of sand and gravel (Harrison 1968).

The project area at Neche is found along the Pembina River. This area is covered by sediments referred to as the Walsh Group. The Walsh Group consists of Holocene sediments, as does the modern Red River Valley. This area is characterized by river and stream alluvium intermittently deposited since the Pleistocene, with silt and fine sand with coarse sand and considerable detritus in places.

The surrounding region consists mainly of sediments of the Coleharbor Group of Pleistocene sediments. This includes flat-bedded clay, silt, and sand of lake sediment origin in level areas representing the former floors of glacial Lake Agassiz. Also present are gravel and sand, commonly silty and poorly drained, which represents delta sediment deposited by the Pembina River as it emptied into ancient Lake Agassiz (Bluemler 1977).

3.3 CLIMATE

This portion of the country is characterized by the U.S. Soil Conservation Service as having a continental climate. Summers are pleasantly warm, and although winters are long and cold, a few mild periods with temperatures above freezing are common. The average daily maximum temperature is 50°F and average daily minimum temperature is 27°F. The average length of the freeze-free period is 120 days. No time of the year, however, can be considered absolutely free of frost or freezing temperatures. Average annual precipitation is 19.89 inches. Eighty-five percent of the precipitation falls from April to October. Mean seasonal snowfall is 37 inches. Days with snowcover average 119. Prevailing winds are northwesterly from November to May and southeasterly from June to October (U.S. Department of Agriculture 1977).

3.4 FLORA

The project area of Neche falls within the Northern Floodplain Forest vegetational zone along the Pembina River. The surrounding prairies contain Bluestem Prairie vegetation. These vegetational zones, as defined by Kuchler (1964), are summarized below.

3.4.1 Northern Floodplain Forest

The physiognomy is low to tall broadleaf deciduous forest, open to dense, often with lianas. Dominant species are cottonwood (Populus deltoides), black willow (Salix nigra), and American elm (Ulmus americana). Other components include: Acer negundo, A. rubrum, A. saccharinum, Betula nigra in the eastern part; Celastrus scandens, Celtis occidentalis, Clematis virginiana, Fraxinus americana, F. pennsylvanica, Gleditsia triacanthos, Juglans nigra in the southern part; Parthenocissus quaquefolia, Platanus occidentalis, also in the southern part; and Populus sargentii, Rhus radicans, Salix amygdaloides, S. interior, Smilax hispida, Symphoricarpos orbiculatus, Ulmus rubra. The occurrence of this vegetational type is from North Dakota to Oklahoma (Kuchler 1964).

3.4.2 Bluestem Prairie

The physiognomy is dense vegetation of tall grasses and many forbs. Dominant species are big bluestem (Andropogon gerardi), little bluestem (Andropogon scoparius), Switchgrass (Panicum virgatum), and Indian grass (Sorghastrum nutans). Other components include: Amorpha canescens, Antennaria neglecta, Aster ericoides, A. laevis, Baptisia leucantha, B. leucophaea, Bouteloua curtipendula, Erigeron strigosus, Galium tinctorum, Helianthus grosseserratus, Koeleria cristata, Liatris aspera, L. punctata, L. scariosa, Panicum leiberghii, P. scribnerianum, Phlox pilosa, Psoralea argophylla, P. floribunda, Ratibida columnifera, R. pinnata, Rosa arkansana, Silphium laciniatum, Solidago altissima, S. missouriensis, S. rigida, Sporobolus heterolepis, and Stipa spartea in the northern part. The occurrence of this vegetation type is from North Dakota and Minnesota southward to Oklahoma (Kuchler 1964).

3.5 FAUNA

The floral assemblage of the area provides habitat for a variety of faunal species. Smaller mammals include jack rabbit (Lepus tounsendii) and ground squirrel (Citellus

richardsoni). Semi-aquatic species such as beaver (Castor Canadensis), muskrat (Ondatra Zibethicus), and mink (Mustela vison) also inhabit the area.

Predators include longtailed weasel (Mustela frevata), red fox (Vulpes vulpes), and coyote (Canis latrans). Large mammals include white-tailed deer (Odocoileus virginianus). Grizzly bear (Ursus horribiles), bison (Bison bison), and possibly elk (Cervus canadensis) and moose (Aces americanus) formerly inhabited the area (Bailey 1926).

Waterfowl is plentiful and includes Canada goose (Branta canadensis), mallard (Anas platyrhynchos), green-winged (Anas carolinensis), and blue-winged (Anas discors) teals, northern shoveler (Spatula clypeata), pintail (Anas acuta), redhead (Aythya americana), and wood duck (Aix sponsa), to name a few. Other avian species include Killdeer (Charadrius vociferus), great horned owl (Bubo virginianus), sharp-tailed grouse (Pedoeocetes phasianellus), and ring necked pheasant (Phasianus colchicus).

3.6 SOILS

Soils were defined from the Pembina County Soil Survey (U.S. Department of Agriculture 1977). Three major soils were included in the Neche project survey area. These are the Fairdale silty clay loam, three to six percent slopes; Cashel silty clay, one to three percent slopes; and the Walpeton silty clay, one to three percent slopes. These soils are described below. To quote the U.S. Soil Conservation Service:

The Fairdale series consists of deep, moderately well drained, nearly level and gently sloping soils on stream terraces, flood plains, and slopes along abandoned stream channels. These soils formed in recent, moderately fine textured alluvium deposited by streams.

In a representative profile the surface layer is very dark grayish-brown silty clay loam about 6 inches thick. The next layer is very dark grayish-brown light silty clay loam about 32 inches thick. Below this is about 8 inches of calcareous, dark grayish-brown silt loam underlain by calcareous, dark grayish-brown mottled, stratified silt and sandy loam [U.S. Department of Agriculture 1977:22].

The Cashel series consists of deep, nearly level to steep, somewhat poorly drained soils on flood plains, terraces, and side slopes along rivers

and abandoned stream channels. These soils formed in fine-textured recent alluvium.

In a representative profile the surface layer is mottled black silty clay about 5 inches thick. The substratum is calcareous, dark olive-gray, mottled silty clay in the upper 13 inches; calcareous, olive-gray, mottled silty clay in the next 24 inches; olive, mottled silty clay in the next 11 inches; and multicolored, calcareous silty clay below.

Permeability is moderately slow, and available water capacity is high. Organic-matter content is moderate. Natural fertility is high [U.S. Department of Agriculture 1977:16].

The Wahpeton series consists of deep, nearly level to sloping, moderately well drained soils. These soils formed in fine-textured, recent alluvium on terrace and natural levees of major streams and rivers.

In a representative profile the surface layer is silty clay about 33 inches thick. It is black in the upper 11 inches and very dark gray in the lower 22 inches. Below this is about 7 inches of dark olive-gray and olive-gray mottled silty clay. The next layer is calcareous silty clay loam, about 9 inches thick, that is mottled gray white, yellowish brown, and dark reddish brown in the upper part and gray and mottled in the lower part. Below this is about 5 inches of dark-gray and gray, mottled calcareous silty clay. It is underlain by dark olive-gray, mottled calcareous silty clay [U.S. Department of Agriculture 1977:48].

4.0 THEORETICAL AND METHODOLOGICAL OVERVIEW

A primary goal of the Corps in initiating and administering a Phase I cultural resources investigation of the project area is to partially fulfill its obligations regarding cultural resources, as set forth in the National Historic Preservation Act of 1966 (Public Law [PL] 89-665), as amended; the National Environmental Policy Act of 1969 (PL 91-190); Executive Order (EO) 11593; the Archaeological and Historical Preservation Act of 1974; the Advisory Council on Historic Preservation "Regulations for the Protection of Historic and Cultural Properties" (36 CFR, Part 800); and the applicable Corps regulations (ER 1105-2-50) (U.S. Department of the Army 1986).

This cultural resources investigation will also contribute to other Corps' goals. It will serve as a planning tool, will be a scholarly document, and will identify resources requiring additional investigations or with the potential for public use development.

The objectives of Powers in undertaking the inventory are the identification of cultural resources within the proposed project area, their evaluation in terms of the criteria for nomination to the National Register of Historic Places (NRHP) as set forth in 36 CFR Part 60.4, and the assessment of the impact of the proposed project on any significant sites. A theoretical concern is to properly interpret each resource within an intellectual framework which placed the sites within a context of known archaeological trends in the region.

The project area surveyed includes about 36 acres located along the Pembina River at Niche, North Dakota. The Pembina is an eastward flowing tributary of the Red River of the North, which forms the boundary between the states of North Dakota and Minnesota and flows northward into Canada. The Red River Valley contains flat terrain within the Central Lowland physiographic region. Archaeologically, the project area is within the Northeastern Periphery of the Plains prehistoric cultural region, as defined by Wedel (1961). Relevant primary information about the nature of prehistoric and historic utilization of the region was obtained from the files search conducted at the State Historical Society of North Dakota, in Bismarck, and other available literature.

Relatively little archaeological work has been done in the Pembina River Valley of North Dakota. Brown et al. (1982) claims that the archaeological record for the area covers over 11,000 years, including manifestations from Clovis to historic times. However, most of the recorded sites are surface finds, and few have been excavated. The period best represented is the Late Prehistoric, from which several Blackduck sites are known. It is expected for the project area, that if prehistoric sites with diagnostic artifacts are found, they most likely will be assigned to the Late Prehistoric period. Sites with ceramics will most likely represent the Blackduck horizon. The most common prehistoric site type will probably be material culture scatters, although it is possible that burial mounds, similar to the Arvilla complex, could be found. Brown et al. (1982) showed that historic sites are numerous in the region. Most likely, these sites will be related to the period of agricultural development after 1871, rather than the earlier fur trade period. Since the project area is along the river, on the floodplain covered in places by forest, it is expected that sites could be found in meadows or parkland settings,

or in cultivated fields, adjacent to river meanders, where ground visibility is best.

After formulating the statement of objectives and conducting the files search, the project area was then inventoried by conducting an intensive pedestrian survey and recording all cultural resources observed. Sites were defined as two or more artifacts, or the presence of a cultural feature, while isolated finds were defined as single artifacts lacking other, associated cultural materials or contexts. The kinds of information to be gathered during the survey were to include the number and types of resources present, site size, location, features, artifacts, cultural and temporal associations, and inferred functions.

5.0 FIELD METHODS

Field methodologies utilized for the Phase I cultural resources inventory of the Neche flood control project are described below. The field methods included surface survey of the individual project components, inspection of river cutbanks, excavation of subsurface shovel probes, and deeper soil cores. Any cultural materials, located either on the surface or in the shovel probes, were to be properly recorded on North Dakota Cultural Resources Survey site forms. The field methods were designed to meet the requirements outlined in the Corps' scope-of-work (U.S. Department of the Army 1986).

The first step in the field investigations consisted of a surface inventory of the project components. These components were located on-the-ground by reference to the area-specific engineering maps provided by the Corps, and the U.S. Geological Survey topographic quadrangle map for Neche. The individual survey areas were of differing dimensions, as determined by each project component (Figures 2 and 3). The larger survey areas of the channel cutoff (Component #1), borrow area (Component #5), and interior drainage ponds (Component #4a and Component #4b) were examined using standard archaeological field pedestrian inventory methods. These areas were walked using 10 to 15 m interval parallel transects. Grassy and forested sections were covered with closer transects, while wider transects were utilized in open, cultivated fields. All places offering good visibility, such as trails, bulldozed areas, erosional and deflation zones, etc., were closely inspected. Linear areas along the levee sections (Components #2 and #3) were inventoried using two parallel, sinuous transects covering the proposed components.

The next step involved the close, detailed examination of the Pembina River channel and selected cutbanks within

the project area. The entire river bank along the project components was inspected, to gain knowledge of soil types, soil depth, and to determine if cultural evidence was present in the profiles. Most of the river banks were badly slumped and grassed over, allowing little visibility. Open cutfaces were examined and representative sections were profiled in tested areas, to determine the nature of the soils to be excavated and the depth to which test probes must be taken.

Areas where surface visibility was poor, and adequate cutbank exposures were lacking, were shovel tested. A gridded probe pattern was utilized across these areas. As specified in the scope-of-work, subsurface test intervals were 15 m. Probe transect patterns were mapped using a Brunton compass or clearly identified on the large scale engineering maps provided by the Corps. Shovel probes were excavated in the Channel Cutoff area (Component #1), the borrow area (Component #5), and part of the southeast levee (Component #3).

Shovel probes were excavated at least 50 cm in most cases. Examination of the river cutbank indicated that the top 50 cm had the highest potential for containing cultural remains. Below that appeared to be culturally sterile unconsolidated alluvium. The probes were large, 30 to 45 cm in diameter. All fill was screened using quarter-inch mesh hardware cloth. The probe profiles were detailed, and later the holes were backfilled.

Certain locations required further testing, as specified in the scope-of-work. A two-inch diameter hand driven soil auger was utilized to make deeper probes. The auger was used to examine soil deposition, and to check for buried paleosols or possible cultural remains beneath the shovel probe depth. It was essentially utilized in areas with high potential for deep soils, such as the borrow pit (Component #5). In general, the soils in the Neche area are not deep, and conventional shovel probes were sufficient to assess the possibility of buried cultural remains.

The channel cutoff and borrow area is currently utilized as a trash dump. These materials are of recent origin, are not considered significant, and were not formally recorded. In addition, certain areas within the town limits contained abandoned modern structures, automobiles, and other materials. These places were noted, but were not recorded as cultural sites.

At the time of the survey, all areas were clear of snow and frost. However, some places were very wet from recent rains. This is particularly true of the interior drainage

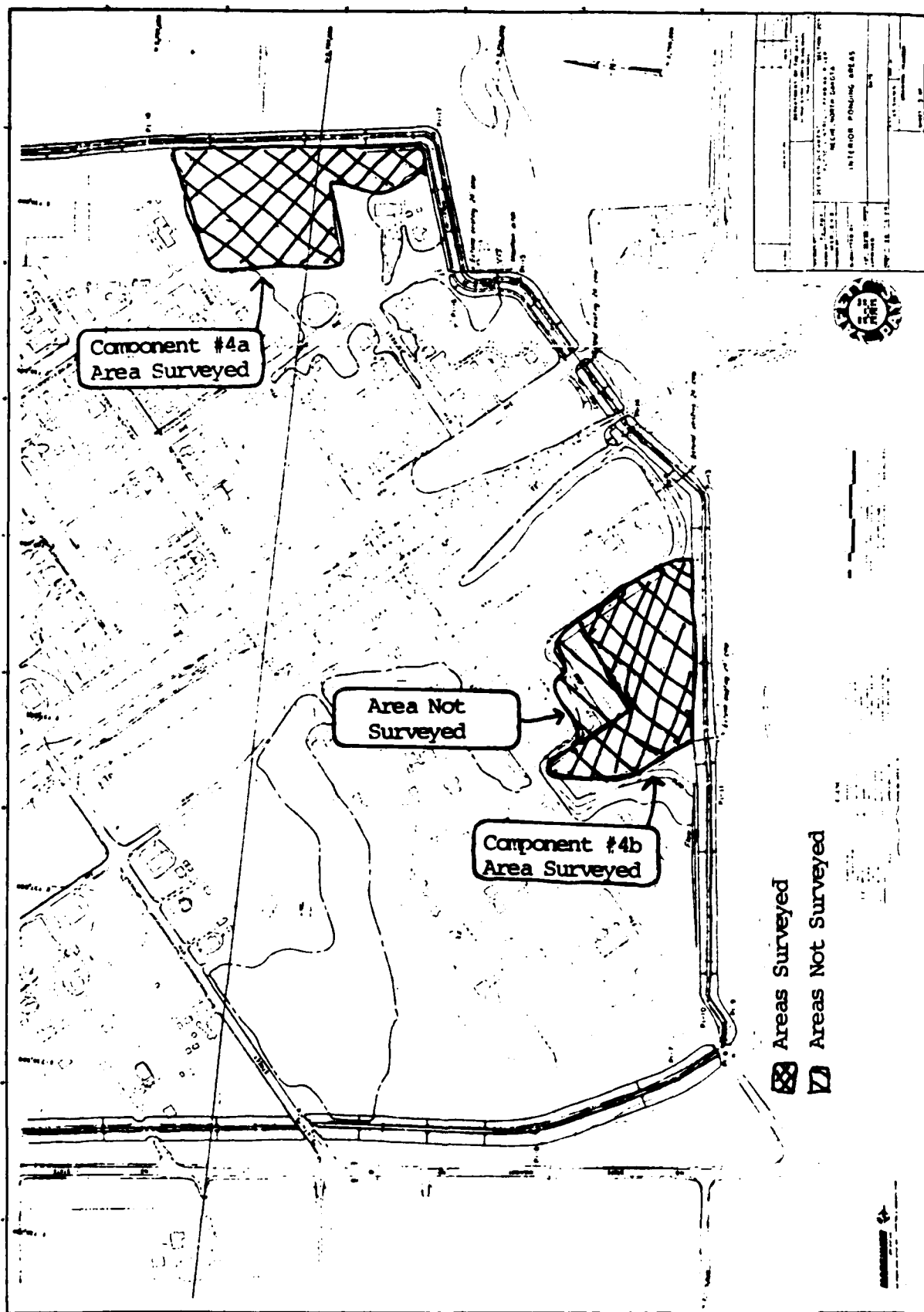
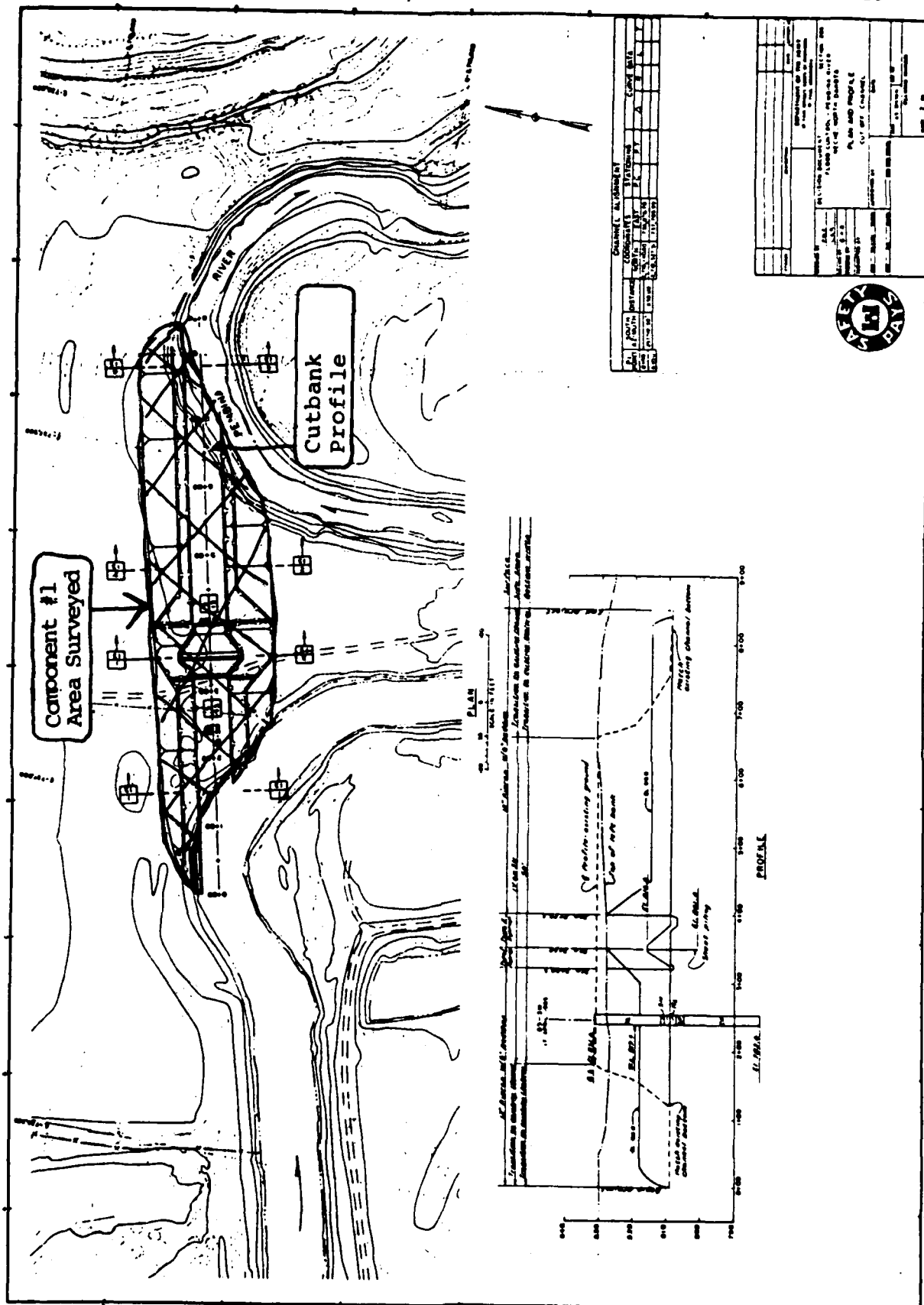


Figure 6

Drainage Pond Components



Neché Flood Control Project
Figure 7
Channel Cutoff Component

from the bulldozing of this trash over the edge of the river bank and around the terrace top. The extreme northern portion of the cutoff is not as heavily disturbed or littered as the southern end. Much of the topsoil has been removed from the terrace by these activities. The area was cultivated in the past, according to the landowner. Visibility at the channel cutoff component was good. Figure 8 illustrates the area surveyed at Component #1.

The river cutbank in the cutoff area was difficult to examine due to the bulldozed accumulation of trash. Profile I is illustrated in Figure 9. This profile was taken on the east end of the cutoff channel, on the north bank of the river. The west side of the river exhibits a similar profile.

The soils at the cutoff channel are of the Fairdale silty loam series. The profile was used to estimate soil depth for the area to be probed. The profile is described below.

Stratum 1 - A very dark black to grayish-brown topsoil level of silty clay loam. An abrupt, smooth boundary is plainly evident. The level contains dense roots and humus. Some scattered historical materials from the trash dump are contained in the upper part. The level is disturbed by cultivation in some areas and truncated by bulldozing in others. The soil zone is loose and moist.

Stratum 2 - A dark grayish-brown, silty clay loam. The layer is sticky, plastic and has a high clay content. An abrupt, fairly smooth boundary is present where not disturbed by root channels. The level is easily defined by color and texture.

Stratum 3 - A grayish-brown stratified silt and sandy loam. The level is not compact and is very loose, friable and mottled in color. The layer is readily recognized by the change in texture to a much higher sand content, with a stratified/bedded appearance. This level continues down below the bottom of the profile, a total depth of almost three meters. It is believed to be unconsolidated river alluvium, and appears to be culturally sterile.

The channel cutoff area was shovel probed using a series of four parallel transects as illustrated in Figure 10. The probes were dug into the level of Stratum 3. One probe in each transect was cored using the soil auger to obtain a deeper test. The cores showed that Stratum 3 continued far below the 50 cm level, and that no cultural materials were associated with it. Transect 1 of the shovel probes was placed on the north end of the impact area heading west along the upper terrace, and avoiding the low channel

Neché Flood Control Project

Figure 8



A: Channel Cutoff Facing East/Northeast From West End of Shovel Probe Transect 4



B: Pembina River Facing South/Southwest Along Channel Cutoff, on East Bank

Views of Component #1

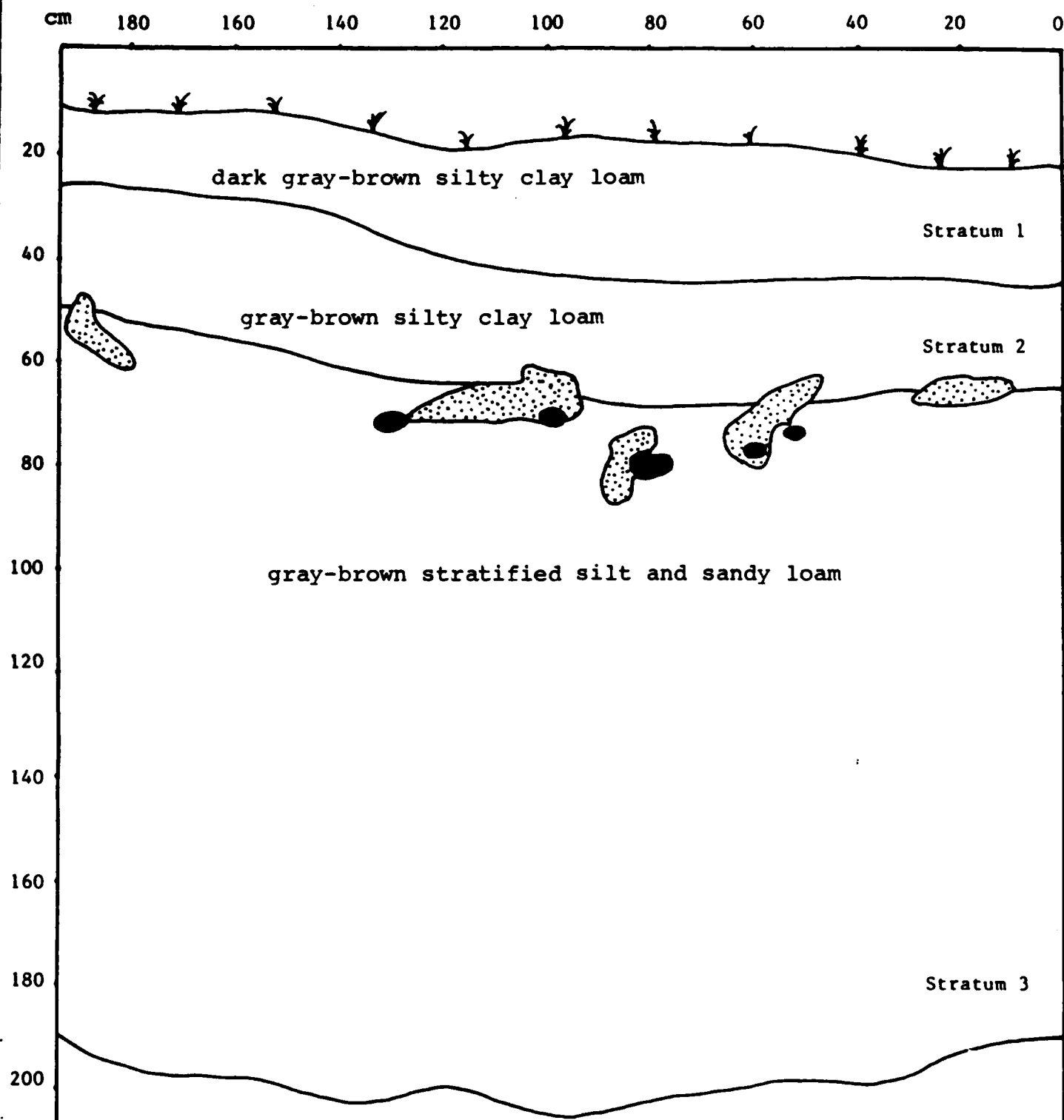


Figure 9 Profile I Channel Cutoff,
East Side of River on North
Bank

Roots = ●
Root Channels = [stippled shape]

swale on the north. The other three transects of probes were aligned parallel to the south of it. A total of 28 probes were excavated. These are summarized in Appendix A.

No prehistoric materials or significant historic remains were found during the surface inspection, or in the cutbank profile, or shovel probes. Given this lack of significant cultural materials, no further archaeological work is recommended at this component.

7.2 BORROW AREA

The proposed borrow area (Component #5) is on the extreme south end of the meander loop to be cut off. It is located in the W1/2, SE1/4, NW1/4 of Section 31, T.164N., R.53N. A total of approximately seven acres was surveyed and tested (Figure 11).

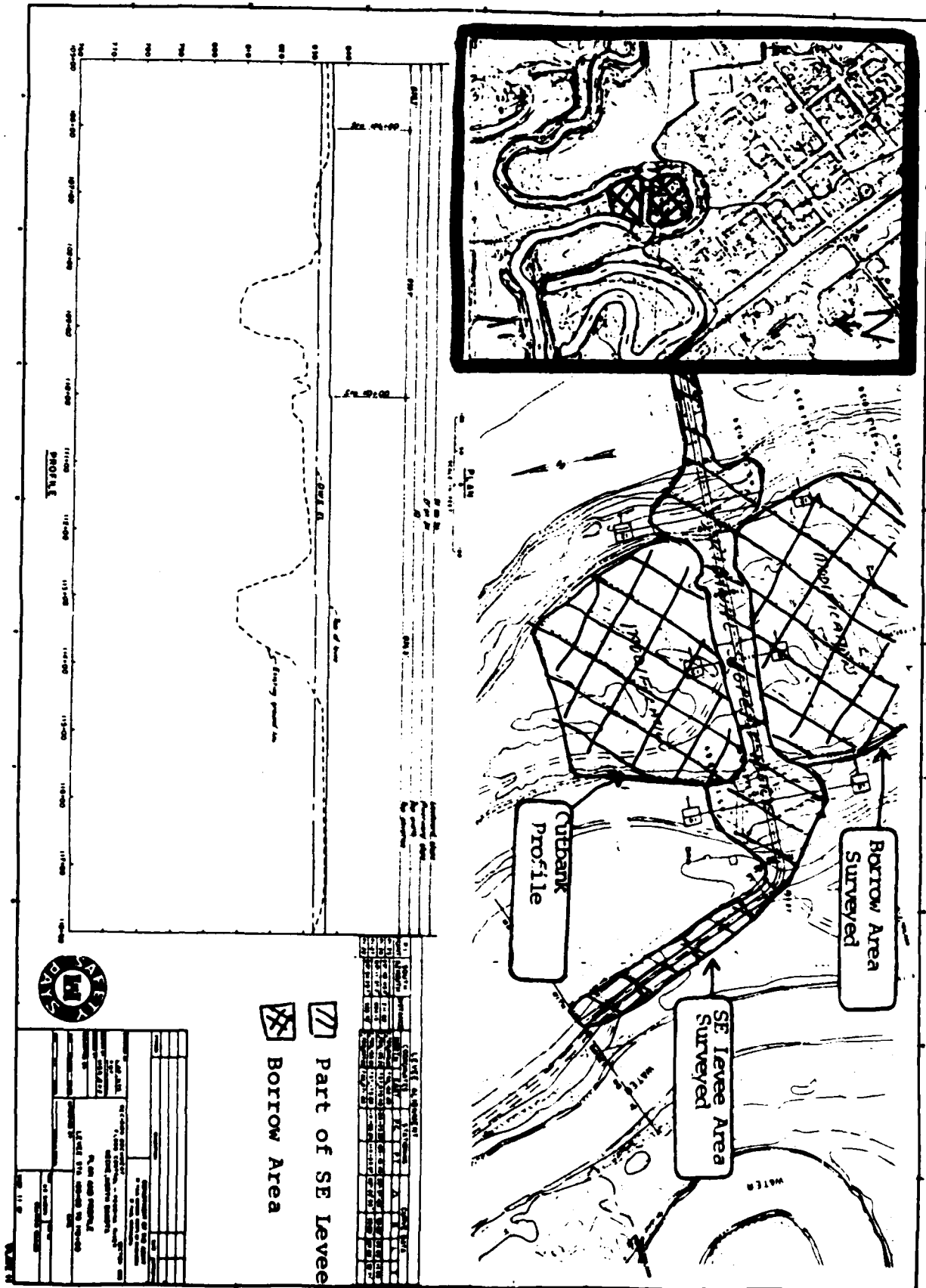
The borrow area on the meander is essentially a flat terrace immediately above the Pembina River channel. The meander is an area recurrently flooded. The surface is covered by stands of Northern Floodplain Forest. However, the borrow area has been disturbed by modern activities. The east side of the terrace has had many of the trees removed and bulldozed into a line on the edge of the terrace (along Shovel Probe Transect #1). Much disturbance and soil removal has occurred on this part of the terrace. The west side of the meander exhibits a well used trail, which goes to a dam and through an abandoned hog farm complex. The extreme south end of the terrace, from the hog farm to the river channel, has been quarried for fill. This quarry has had soil completely removed to a depth of several feet. The meander has been utilized as a source of fill for some 15 years according to the landowner. Figure 12 illustrates the borrow area.

An abandoned hog farm complex was noted in the borrow area, in the NW1/4, SE1/4, NW1/4 of Section 31, T.164N., R.53W. It covers a total of about 2,806 sq m, and consists of the remains of a shed, a burned down structural feature, the remnants of a fence, and a raised gas or water tank. Several abandoned automobiles, a wood pile, and various recent cultural materials are also present. The complex was a hog raising facility, operated by Harold Jensen in the 1950s and 1960s. The place has poor integrity and is not historically significant.

The south end of the meander has been quarried out, but numerous well preserved cutbanks around the perimeter are visible for study. Profile II is illustrated in Figure

Figure 11

Borrow Area and Portion of the Southeast Levee



Neché Flood Control Project

Figure 12



A: Borrow Area, East Side of the Meander, Looking South Along Shovel Probe Transect #1



B: Borrow Area, Looking West at Quarried Portion, South End of the Meander

Views of Component #5

13. This profile is similar to Profile I and representative of the soils present. No prehistoric remains were discovered in the cutbanks. Near the profile, in the river bank, an animal skull was observed 1.2 m below the surface, in what is believed to be culturally sterile alluvium. The bone was probably washed in, and no cultural materials were associated with it.

Profile II is found on the northwest edge of the borrow area (Figure 11). The profile is described below. Soils are of the Fairdale series.

Stratum 1 - A modern soil zone of roots and humus. It is a dark gray-brown, silty to silty clay loam. It contains high clay content, but much more silt. A definite, abrupt change in texture occurs at the base, at the top of Stratum 2, although not much color change occurs. At the base of this level is a buried piece of rusted barbed wire. This unit is believed to represent a level of modern overbank deposits from flooding of the river. The remainder of the profile is essentially the same as Profile I.

Stratum 2 - A dark gray-brown, silty clay loam. This stratum has much higher clay content than the level above it, with a definite textural difference. The soil is very friable. This is believed to represent the old soil zone and former stable surface prior to modern flooding.

Stratum 3 - A light brown sandy clay loam. The stratum also contains definite pockets of sand.

Stratum 4 - A darker gray-brown, silty clay loam. It is friable, with high clay content. This is essentially the same soil as Stratum 2.

Stratum 5 - A light brown sandy clay and silt in a stratified/bedded alluvial deposit. This is essentially the same as Stratum 3 of Profile I and is believed to be below the level of potential cultural deposits.

A similar profile was recorded (not illustrated) on the west side of the river, just north of the dam. The profile here was essentially identical to Profile I, with the addition of the recent zone of overbank deposition.

The only section of the borrow area that needed to be tested due to low visibility was the northeastern portion along the edge of the river. This is an area where dense forest has been cleared away. The shovel probe pattern is presented in Figure 14. Soil zones in the probes were estimated using the cutbank profiles as a data base. A total of 18 shovel probes were excavated in this area. They are summarized in Appendix A.

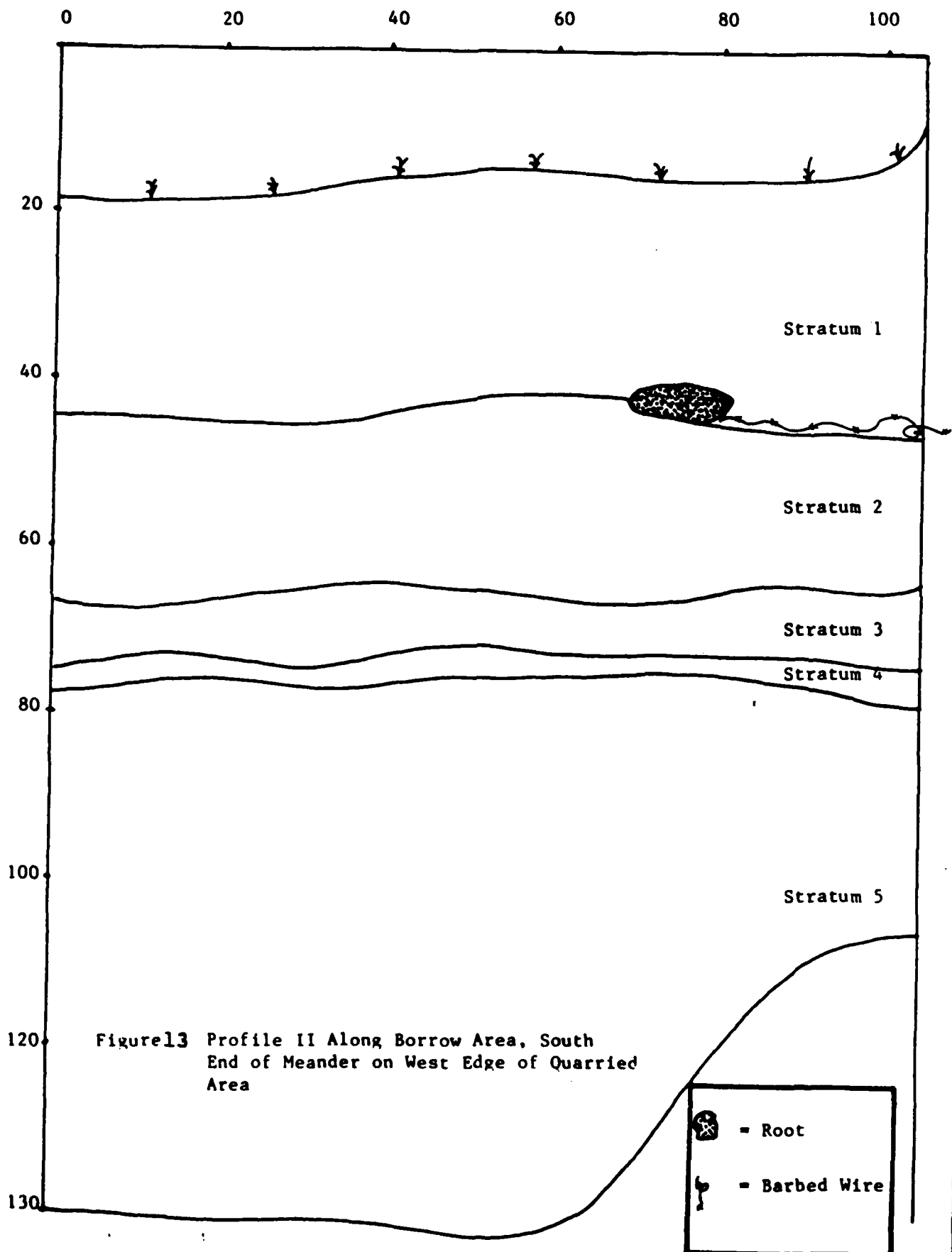
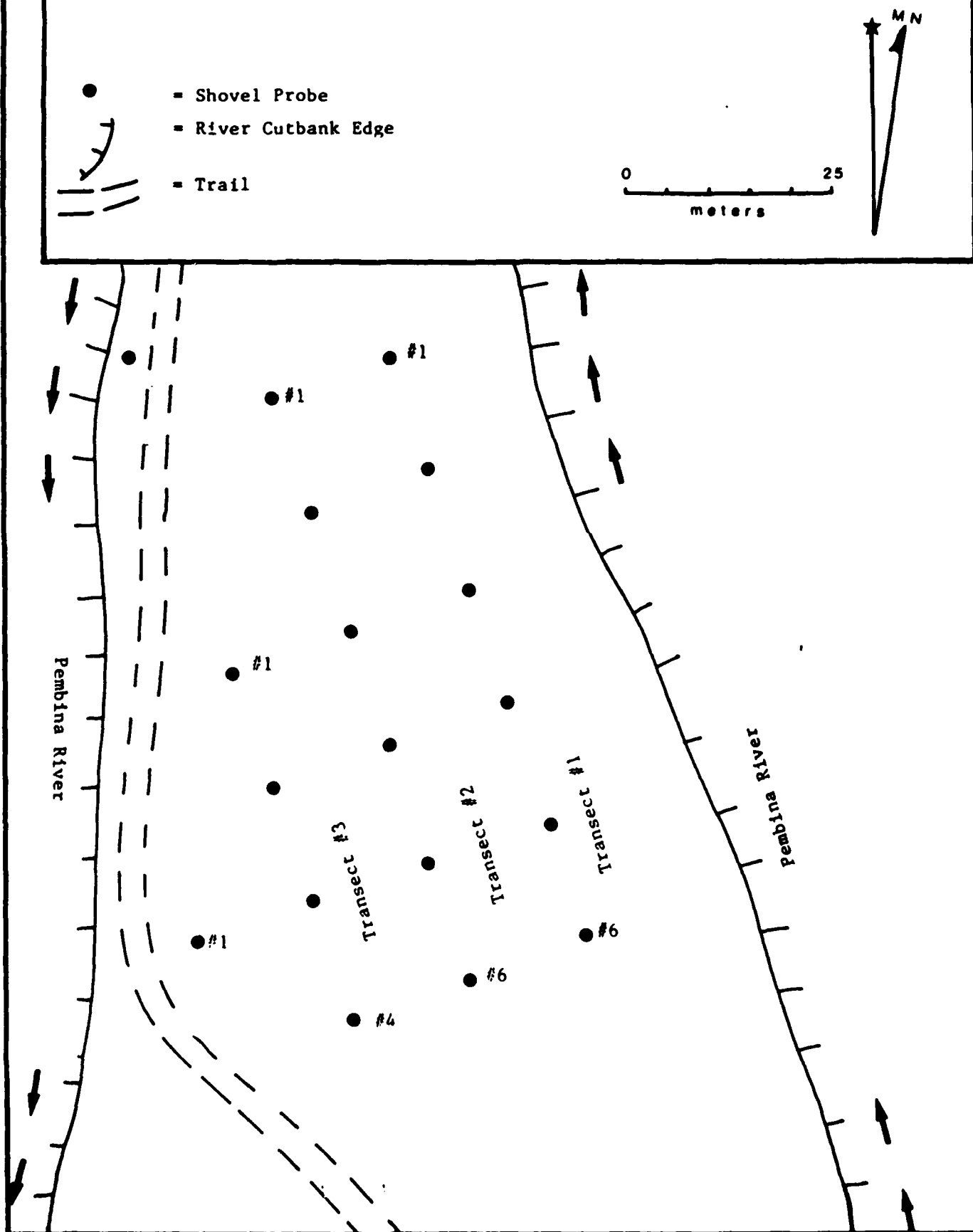


Figure 13 Profile II Along Borrow Area, South End of Meander on West Edge of Quarried Area

Figure 14 Borrow Area, Sketch Map of Shovel Probes

Neché Flood Control Project



The soil profiles in the probes were highly variable, and somewhat different from the channel cutoff area where all profiles were essentially the same. The more complicated stratigraphy in these probes may be due to extreme moisture in some of them, making color and textural differences harder to ascertain. However, there appears to be a definite recent overbank deposit in this area of the meander not present in the cutoff channel. This zone is variable in depth.

No prehistoric materials were found in any of the excavated probes, surface examinations, or cutbank profiles. No further archaeological work in the borrow area is recommended.

7.3 NEW LEVEE SECTIONS

Two new levee sections are being considered for the Neche flood control project. These levees are discussed separately below.

7.3.1 New Levee Section from Pembina River Southeast

This new levee section (Component #3) begins at the Pembina River, at the Highway 18 bridge just north of the ballpark, and heads southeast across several river meanders to join an existing levee. The alignment is about 2,300 ft in length and varies from 50 to 200 ft in width. The new levee crosses the S1/2, NW1/4, NW1/4; NE1/4, SW1/4, NW1/4; and N1/2, SE1/4, NW1/4 of Section 31, T.164N., R.53W. (Figure 15).

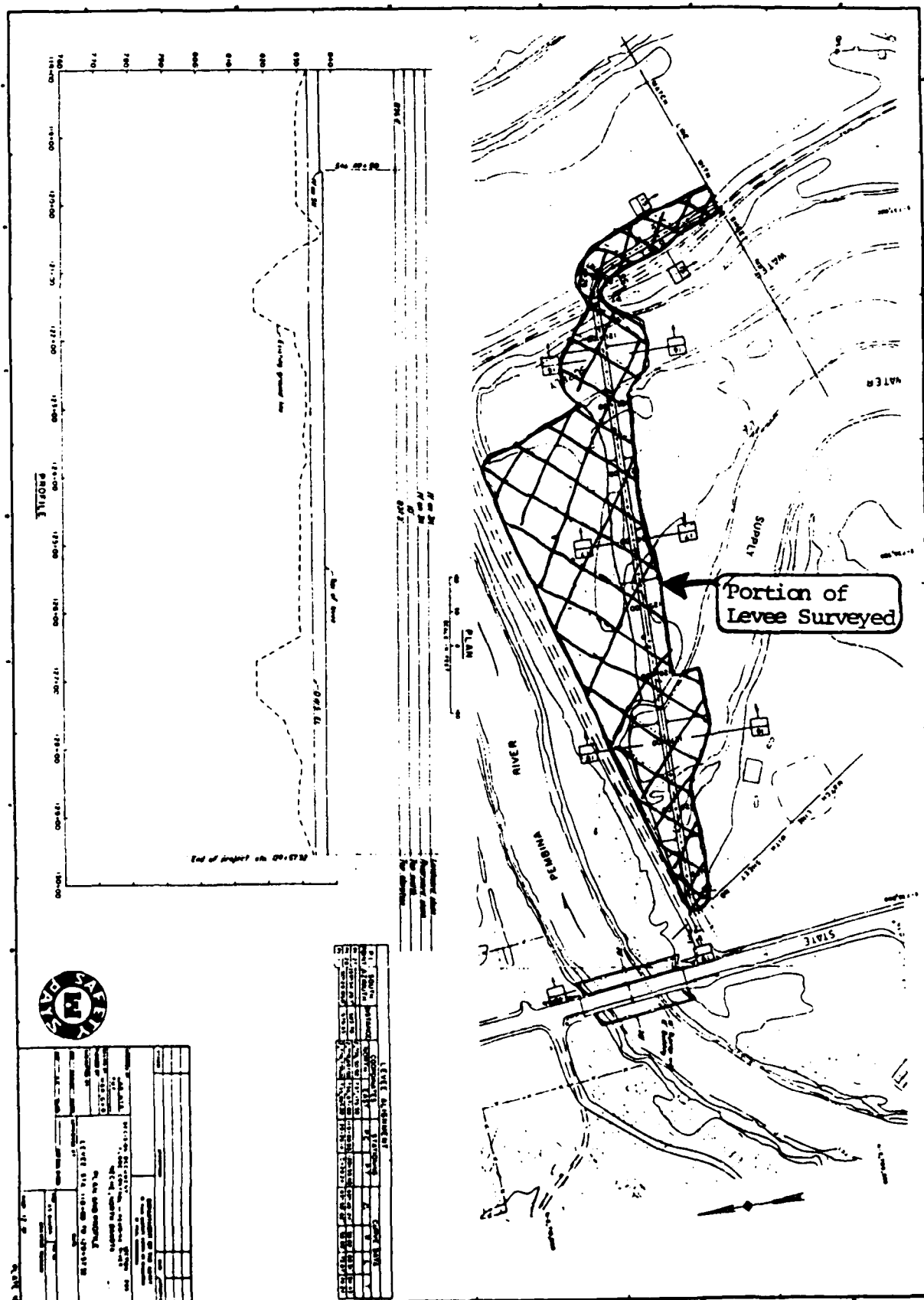
The levee starts at the north edge of the ballpark and follows the existing levee east along a former river channel. This water filled meander is the city of Neche's water supply. A large triangular shaped area at the northwest end of the new levee is a plain covered by tall grasses. Good site potential exists along this meander channel of the Pembina River. The area is moderately disturbed, with limited visibility. A few large rodent backdirt mounds in this area were examined. This section was shovel tested. After the levee crosses the water supply meander, it follows an existing levee south-southeast to the city dam. The survey area on the east side of the levee is a grassy plain. The area is disturbed and has been borrowed from to form the existing levee. This area was not considered to have high site potential and so no shovel testing was done.

The new levee crosses the Pembina River at the dam and angles across the inside of a meander loop. This meander

Neché Flood Control Project

Figure 15

Portion of the Levee From the Pembina River Southeast



loop had already been surveyed and tested as part of the proposed borrow area (Component #5) (Figure 11).

The new levee then recrosses the Pembina River channel to connect with an existing levee. The cutbank on the east side of the river was deep and offered good visibility. At no other point along the river did this levee offer good cutbank exposures. The upper terrace area between the river and the existing levee is under small grain cultivation. This section was fallow and offered excellent visibility. No cultural materials were observed.

The large triangular-shaped area at the northwest end of Component #3 was selected for shovel testing, based upon appraised site potential. On the north of the tested area is the existing levee, and on the south is a low swale. The testing was confined to the undisturbed areas between the low swale and the levee and the immediate bank above the river meander on the west end. The probes are illustrated in Figure 16. The probed area and levee section are shown in Figure 17.

A total of eight shovel probes were excavated in the test area. The soils in this area are once again the Fairdale series. Other portions of the levee cross soils of both the Cashel and Wahpeten series. The shovel probes are summarized in Appendix A.

No cultural materials were recovered in any of the shovel probes. Evidence of burns was observed in Probes 1 and 4. These are thin, discontinuous charcoal stains, and no cultural materials were associated with the lens. They appear to be from natural, such as a prairie fire, not cultural, phenomena.

No cultural remains were found along this proposed new levee. No further work is recommended in this area.

7.3.2 New Levee Section South along Highway 18

This section of new levee (Component #2) begins at the Highway 18 bridge on the Pembina River, and heads south along the east edge of the highway to intersect an existing levee. The alignment is 2,100 ft in length and from 50 to 70 ft wide. The new levee crosses portions of the SW1/4, NW1/4, NW1/4; W1/2, SW1/4, NW1/4 and NW1/4, SW1/4 of Section 31, T.164N., R.53W. (Figure 18).

The levee begins at the north end of the ballpark. At its northeastern corner it intersects the beginning of Component #3. Component #2 runs due south along the east

NECHE FLOOD CONTROL PROJECT

Figure 16

Map of New Levee Section
With Shovel Probe
Locations

MN

● = Probes

0 25

meters

Existing Levee

Low Swale

Municipal Water Supply

Municipal Water Supply

3

2

4

1

5

6

7

8

8

Neché Flood Control Project

Figure 17



A: New Levee Section Southeast, Looking Southeast
to Dam along Existing Levee and Survey Area



B: New Levee Section Southeast, Looking Southeast
at end of Levee Survey Area to Existing Levee

Views of Component #3

Neché Flood Control Project

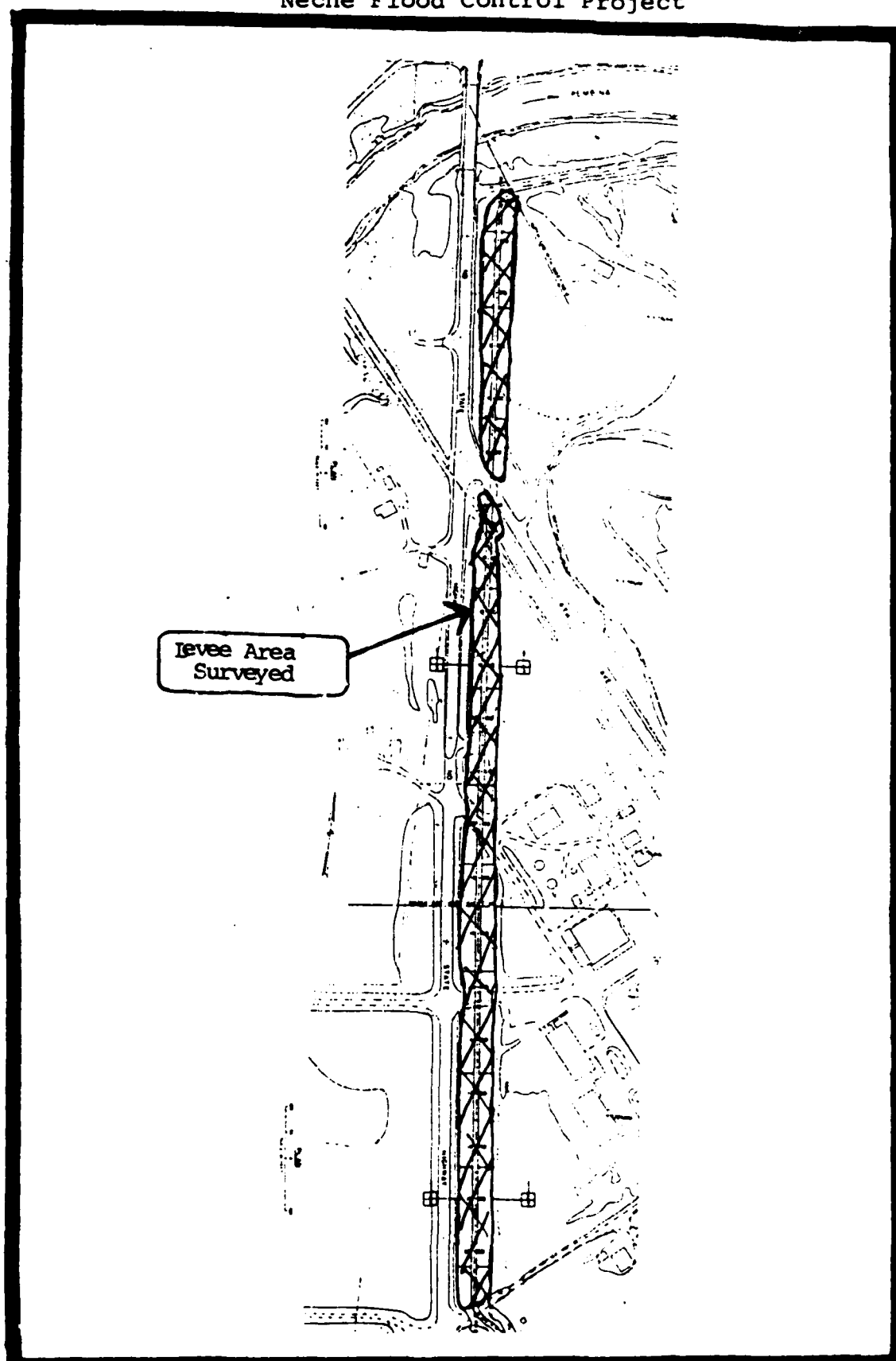


Figure 18

New Levee Section South Along Highway 18

side of Highway 18. The entire length of the surveyed levee lies in the borrow ditch of Highway 18. Several feet of dirt has been removed in places. Thus, this new levee corridor was previously disturbed. The levee is shown in Figure 19.

The ballpark area of the levee offers some surface visibility; about 30%. However, part of this may be fill to level off the ballpark. About 50 ft outside of the area of disturbance for the levee are a series of garden plots along a transmission line. These were surveyed because they offered good visibility and might indicate potential site locations. A shelter belt area of trees on the south edge also offered good visibility. The remaining portions of the levee were of low visibility due to dense grass. No cultural remains were found either along the new levee or in the adjacent gardens and trees. Soils in this survey area are of the Cashel and Wahpeton series.

Testing of the levee along Highway 18 was not considered to be necessary due to the lack of observed materials in the adjacent gardens and because of the disturbance from the initial highway construction. Given the lack of cultural resources, no further archaeological work at this levee is recommended.

7.4 INTERNAL DRAINAGE PONDS

Two proposed internal drainage ponds were surveyed for the Neche flood control project. These are described below.

7.4.1 Interior Drainage Pond in the Southeastern Portion of Neche

This proposed interior drainage pond (Component #4a) is approximately 5.5 acres in size and is situated at the very east end of Seventh Street in the southeastern portion of Neche. It is located within parts of the SW1/4, NW1/4, SE1/4 and the NW1/4, SW1/4, SE1/4 of Section 31, T.164N., R.53W. (Figure 6).

This proposed drainage pond is bounded on the west by an existing levee and on the east by a residential neighborhood. The entire area is relatively flat and currently under small grain cultivation. Soils are of the Wahpeton series. The pond area is about 0.5 miles south of the Pembina River, on an open plain (Figure 20A).

The field was still very wet and muddy from recent rains at the time of the survey. The low area next to the trees

Neché Flood Control Project

Figure 19



A: New Levee Section South Along Highway 18



B: New Levee Section Along Highway 18, Facing North

Views of Component #2

Neché Flood Control Project

Figure 20



A: Southeast Drainage Pond, Facing Southeast



B: Southern Drainage Pond, Facing West

Views of Components 4A & 4B

contained a large pond of standing water. The field was walked using 10 to 15 m transects. However, the very wettest and muddiest areas were avoided. Visibility in the surveyed portion of the field was excellent.

No cultural materials were discovered. Some modern trash is scattered near the residential areas. Given this lack of significant cultural resources, no further archaeological work at this component appears warranted.

7.4.2 Interior Drainage Pond at the Southern End of Neche

This proposed interior drainage pond (Feature #4b) is located in the SW1/4, SE1/4, SW1/4 of Section 31, T.164N., R.53W. at the southern end of Neche. The total area surveyed covered about five acres (Figure 6).

A total of seven acres was to be surveyed, but permission to survey a two acre section was denied by the landowners. The city of Neche owns a portion of the survey area which was covered.

The survey area is bounded on the south by an existing levee, on the west by a drainage channel, on the east by an alley, and on the north by privately owned gardens. The area is essentially flat with a marked slope to the west toward the drainage channel. A thick stand of trees is located just south of the garden area. The tree area contains modern trash, which was not recorded. The remaining areas are flat to gently rolling. Low swales still contained standing water. The survey area is grassy, but has been mown short. Visibility ranged from fair to poor (Figure 20B). Soils in this area are of the Wahpeton series.

No materials of prehistoric origin or of historic significance were recorded or noted in this survey area. It is suggested that the Corps obtain landowner permission to survey the two acre portion of this component which Powers was denied access to, prior to construction of the drainage pond at this location.

8.0 EVALUATION AND CONCLUSIONS

A Phase I cultural resources investigation was conducted by Powers for the Neche flood control project in Pembina County, North Dakota in May, 1986. The project components include a channel cutoff, a borrow area, two new levee sections, and two interior drainage ponds. The study utilized surface inspection, cutbank profiles, subsurface shovel probes, and soil corings, to locate cultural materials.

As a result of the inventory, no prehistoric or significant historic sites were recorded. The shovel probes were also negative, indicating a low potential for buried cultural resources.

9.0 RECOMMENDATIONS

No significant cultural remains were found during the Powers survey of the various components for the Neche flood control project. The shovel probes indicated a low potential for possible buried cultural materials at the project components. No further archaeological work is recommended at these locations, with one exception. It is suggested that the Corps obtain landowner permission to survey the two acres at Component #4b, to which Powers was denied access. This section of that component should be inventoried prior to project construction.

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APPENDICES:

Appendix A: Shovel Probe Summary

Appendix B: Scope-of-Work

Appendix C: Vitae

APPENDIX A:

Shovel Probe Summary

SHOVEL PROBE SUMMARY - CHANNEL CUT-OFF AREA

<u>TRANSECT PROBE #</u>	<u>LOWZONE TOPSOIL CM</u>	<u>ZONE 2 CM</u>	<u>TOTAL DEPTH ZONE 3 CM</u>	<u>COMMENTS</u>
1.1	24	38	49	Definite PZ
1.2	26	48	56	Definite PZ
1.3	18	42	51	Definite PZ
1.4	21	41	48	Definite PZ
1.5	28	47	52	Definite PZ, cord additional 30 cm
1.6	23	40	48	Definite PZ
1.7	20	33	39	Definite PZ
1.8	23	not present	31	low, eroded
1.9	21	41	51	PZ
1.10	22	43	52	Across fence, not plowed
2.8	26	43	54	Across fence, not plowed
2.7	33	48	56	
2.6	17	37	48	Low swale
2.5	27	45	51	
2.4	24	44	53	Topsoil intact
2.3	22	50	56	Topsoil intact
2.2	25	45	54	Topsoil intact
2.1	24	44	51	Topsoil intact
3.1	16	29	Terminated	Large roots, surface bulldozed
3.2	28	46	51	
3.3	21	39	44	(cored 35 cm deeper)
3.4	18	45	51	PZ probable
3.5	8	40	45	Truncated topsoil
4.5	12	43	51	Truncated topsoil
4.4	8	41	48	Truncated topsoil
4.3	10	39	44	Cored 30 cm, truncated
4.2	10	38	46	Truncated
4.1	24	48	53	Not bulldozed

Total of 28 probes were excavated. Soil profiles same as in the profile, various depths recorded. No prehistoric materials were recovered. No significant historical materials recovered.

SHOVEL PROBE SUMMARY
MODIFICATION OF BORROW AREA ON MEANDER

<u>PROBE ON VERY NORTHWEST END OF MEANDER</u>	<u>(ZONE A, CM OVERBANK) STRATIFIED/BEDDED</u>	<u>ZONE B, CM</u>	<u>ZONE C, CM</u>	<u>ZONE E</u>
1.1	17	31	61	Not Reached
1.2	40	52	63	Not Reached
	36	56	60	Augered (40 cm) to one m, not reached, auger does not work per week, indis- tinguishable zones, heavy clay to one m, did not reach sandy subsoil
1.3	<p>More stratified appearance, no large overbank 0-5 cm, overbank 5-15 cm, dark grey-brown, friable clay loam 15-24 cm, lighter-brown, silty clay loam 24-37 cm, darker-brown, friable clay loam 37-60 cm, lighter-brown, silty clay loam 60 cm-1 m, augered, no change</p>			
1.4	<p>0-7 lighter-brown silts (overbank) 7-31, dark-brown, clay loam 31-46 cm, lighter brown, silty clay loam augered to 88 cm, no charge</p>			
1.5	<p>in low bulldozed area (appears to be bottom profile) 0-8 cm, dark grey brown, friable clay loam 8-30 cm lighter brown, silt loam 30-41 cm silty sandy subsoil</p> <p>some of the silty clay loam deposits in probe may be subsoil, but it is not so easy to distinguish in wet, very moist probes, as it is in dryer profile banks.</p>			
1.6	<p>0-53 cm, dark grey-brown, clay loam, no discernable changes in color or texture in this probe. Augered to 90 cm, no real changes</p>			
2.6	<p>0-51 cm, no discernable change, same as 1.6, stopped at large root</p>			

- 2.5 Standard Profile
 0-9 cm, overbank
 9-23 cm, friable dark grey-brown, clay
 loam soil
 23-51 cm, silty clay, lighter brown loam
 51-55 cm, subsoil
- 2.4 0-29 cm, overbank
 29-43 cm, dark grey-brown clay loam
 43-60 cm, silty clay, lighter brown loam
- 2.3 0-13 cm, overbank
 13-28 cm, dark grey-brown, clay loam
 28-52 cm, lighter, silty clay subsoil
 augered to 91 cm, no discernable change,
 maybe more silt at the base
- 2.2 0-17 cm, dark grey-brown, clay loam,
 no overbank
 17-26 cm, light brown, silty clay,
 terminated at the roots
- 2.1 0-26 cm, overbank
 26-48 cm, dark grey-brown, clay loam
 48-59 cm, lighter brown, silty clay
 loam
 59-88 cm, augered, no change, more
 silt toward the bottom
- 3.1 0-26 cm, overbank
 26-39 cm, dark grey brown, clay loam
 39-60 cm, light grey brown, silty loam
- 3.2 Normal Profile
 0-13 cm, dark grey-brown, clay loam,
 no overbank
 15-44 cm, light brown, silty loam
 14+ cm, subsoil
- 3.3 Low bulldozed area
 0-21 cm, dark grey-brown loam
 21-39 cm, lighter brown loam
 39-58 cm, seems to be more silt and
 sand
- 3.4 0-20 cm, overbank
 20-36 cm, dark brown, clay loam
 36-42 cm, light, silty loam, roots
- 4.1 0-17 cm, no overbank, dark grey-brown,
 clay loam
 17-28 cm, lighter, silty loam, stopped
 at the large root

SHOVEL PROBE SUMMARY

NEW LEVEE SECTION FROM PEMBINA RIVER SOUTHEAST

Probe 1 - 0-11 cm, dark brown-black, silty clay loam topsoil
11-16 cm, lighter brown, silty clay
16-18 cm, burn area with charcoal and ash
18-36 cm, light brown, silty clay loam
36-42 cm, dark brown, silty clay loam
42-60 cm, sandy silty loam, subsoil

Probe 2 - 0-16 cm, dark brown-black, silty clay loam
16-27 cm, lighter brown, silty clay
27-30 cm, dark brown, silty clay loam
30-48 cm, lighter brown, silty clay loam
48-55 cm, sand

Probe 3 - 0-17 cm, dark brown-black, silty clay loam
17-51 cm, light brown, silty clay loam
51-55 cm, light sandy, silty clay subsoil

Probe 4 - 0-18 cm, dark brown-black, silty clay loam
18-30 cm, light brown, silty clay loam
30-32 cm, charcoal ash, burn area
32-51 cm, light brown, silty clay loam
51-55 cm, subsoil

More clay, deeper silty clay loam:

Probe 5 - 0-10 cm, dark brown, silty clay loam topsoil
10-50 cm, light brown, silty clay loam, mottled darker brown

Probe 6 - 0-15 cm, dark brown-black, clay loam topsoil
15-55 cm, light brown, clay loam mottled darker brown

Probe 7 - 0-18 cm, dark brown, clay loam
18-50 cm, lighter brown, silty clay loam with mottling

Probe 8 - 0-14 cm, dark brown, clay loam
14-51 cm, lighter brown, silty clay loam
15-55 cm, subsoil with mottling

APPENDIX B:

Scope-of-Work

SCOPE OF WORK
PHASE I CULTURAL RESOURCES INVESTIGATION
OF A PROPOSED FLOOD CONTROL PROJECT ALONG THE PEMBINA RIVER
AT NECHE, IN PEMBINA COUNTY, NORTH DAKOTA

1.00 INTRODUCTION

1.01 The Contractor will undertake a Phase I cultural resources investigation of the project area for a proposed flood control project along the Pembina River at Neche, in Pembina County, North Dakota.

1.02 This investigation partially fulfills the obligations of the Corps of Engineers (Corps) regarding cultural resources, as set forth in the National Historic Preservation Act of 1966 (Public Law [PL] 89-665), as amended; the National Environmental Policy Act of 1969 (PL 91-190); Executive Order (EO) 11593 for the "Protection and Enhancement of the Cultural Environment" (Federal Register, May 13, 1971); the Archeological and Historical Preservation Act of 1974 (PL 93-291); the Advisory Council on Historic Preservation "Regulations for the Protection of Historic and Cultural Properties" (36 CFR, Part 800); and the applicable Corps regulations (ER 1105-2-50).

1.03 The laws listed above establish the importance of Federal leadership, through the various responsible agencies, in locating and preserving cultural resources within project areas. Specific steps to comply with these laws, particularly as directed in PL 93-291 and EO 11593, are being taken by the Corps "... to assure that Federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures, and objects of historical, architectural, or archeological significance." A part of that responsibility is to locate, inventory, and nominate to the Secretary of the Interior all such sites in the project area that appear to qualify for listing on the National Register of Historic Places.

1.04 EO 11593 and the 1980 amendments to the National Historic Preservation Act further direct Federal agencies "... to assure that any federally owned property that might qualify for nomination is not inadvertently transferred, sold, demolished or substantially altered." In addition, the Corps is directed to administer its policies, plans, and programs so that federally and non-federally owned sites, structures, and objects of historical, architectural, or archeological significance are preserved and maintained for the inspiration and benefit of the people.

1.05 This cultural resources investigation will serve several functions. The report will be a planning tool to aid the Corps in meeting its obligations to preserve and protect our cultural heritage. It will be a comprehensive, scholarly document that not only fulfills federally mandated legal requirements but also serves as a scientific reference for future professional studies. It will identify resources that may require additional investigations and that may have potential for public-use development. Thus, the report must be analytical, not just descriptive.

2.00 PROJECT DESCRIPTION

2.01 The Pembina River is prone to flooding at the town of Niche, in Pembina County, northeastern North Dakota. A flood control project has been proposed to protect the town. The project would include upgrading the existing levee, constructing additional levee sections, and constructing a cutoff channel on the river (see figure 1).

2.02 No prehistoric or historic archeological sites or significant standing structures have yet been reported for the project area. However, the State Historical Society has listings for two undocumented site "leads" that may be in the vicinity. The first is the Old Red Hall, a potentially significant building listed as being in the SW1/4 of Section 31, T.164N., R.54W. The second is the reputed site of a ca. 1800 Hudson's Bay Company fur trade post, tentatively assigned to the NE1/4 of Section 36, T.164N., R.54W. Surveys along other segments of the Pembina River have revealed a high density of archeological sites, as have surveys near the Canadian border just northeast of the project area.

2.03 The proposed flood control project would include the following components (see figure 2):

a. The cutoff channel would involve construction in an area roughly 850 feet long and a maximum of 180 feet wide across a meander loop of the Pembina River. The area is wooded or brushy; shovel testing would be required, as well as coring or other techniques to look for evidence of buried cultural deposits.

b. One new levee section would extend south from near the Pembina River, adjacent to State Highway 18, eventually intersecting the existing levee. The proposed alignment is grassy, and about 2,100 feet long and 50 to 200 feet wide.

c. The other new levee section would begin at the same starting point and extend to the southeast across meander loops of the river to intersect the existing levee. This new alignment is about 2,300 feet long and 30 to 70 feet wide. Much of it is brushy or wooded and would require shovel testing and examination for buried deposits.

d. Two interior drainage ponds would be excavated, one on the southern edge of the project area and the second in the southeastern corner. The first is grassy and roughly 7 acres in size. The second is a cultivated area about 5-1/2 acres in size.

2.04 This cultural resources investigation will consist of a Phase I survey to identify the nature and extent of any cultural resources present in the flood control project area. The purposes of the study are (1) to assess the potential impact of the proposed project upon any cultural resources present in the project area; (2) to determine the need for further evaluation of them; and (3) to recommend a specific approach for any further studies necessary.

2.05 To date, no additional source of fill has been identified. If a borrow site is identified, a cultural resources survey of this area may also be necessary. Costs for a survey should not be included in the initial bid. Instead, this work would be added, at the Government's discretion, as a modification to the contract.

3.00 DEFINITIONS

3.01 Cultural Resources include any building, site, district, structure, object, data, or other material relating to the history, architecture, archeology, or culture of an area.

3.02 A Phase I Cultural Resources Survey is an intensive, on-the-ground study of an area sufficient to determine the number and extent of the resources present and their relationships to project features. It will provide (1) data adequate to assess the general nature of the sites present; (2) recommendations for additional testing of those resources that may provide important cultural and scientific information; and (3) detailed time and cost estimates for Phase II testing.

3.03 Phase II Testing is the intensive testing of a resource that may provide important cultural or scientific information. This testing will result in (1) information adequate to determine whether the resource is eligible for inclusion on the National Register of Historic Places; (2) a Phase III mitigation plan for any eligible resources that will undergo a direct or indirect impact; and (3) detailed time and cost estimates for the mitigation.

3.04 Phase III Mitigation is the mitigation of the direct or indirect impacts of construction upon eligible sites through the systematic removal of data. It typically includes the excavation of either complete cultural deposits or a systematic sample of them and the thorough analysis and interpretation of the data recovered. The excavation, analysis, and interpretation methods must be adequate to address the important research questions based on which the resource was determined eligible. In addition, because the mitigation process destroys the resource, data should be recovered that may be needed to address future research questions.

4.00 SURVEY REQUIREMENTS

4.01 The Contractor will conduct a Phase I cultural resources investigation of the proposed flood control project area at Neche, in accordance with Sections 2.04 and 3.02 above.

4.02 The Contractor's work will be subject to the supervision, review, and approval of the Contracting Officer's representative.

4.03 The Contractor will employ a systematic, interdisciplinary approach in conducting the study, using techniques and methods that represent the current state of knowledge for the appropriate disciplines. The Contractor will provide specialized knowledge and skills as needed, including expertise in archeology and other social and natural sciences, particularly geomorphology, soil science, history, and historical archeology.

4.04 The Contractor will provide all materials and equipment necessary to perform the required services expeditiously.

4.05 The Contractor's survey will be an on-the-ground examination sufficient to determine the number and extent of any cultural resources present, including standing structures as well as prehistoric and historic archeological sites.

4.06 The Contractor's survey will include surface inspection in areas where surface visibility is adequate to reveal any cultural materials that are present and subsurface testing in all areas where surface visibility is inadequate. Subsurface investigation will include shovel testing, coring, soil borings, cut bank profiling, or other appropriate methods. If the field methods used vary from those that are required, they must be described and justified in the Contractor's report.

4.07 The survey interval required for subsurface testing is 15 meters (50 feet). However, this interval may vary depending upon field conditions, site density, or size. If a larger interval is used, this decision must be justified in the Contractor's report.

4.08 The Contractor will screen all subsurface tests through 1/4-inch mesh hardware cloth.

4.09 The Contractor will recommend any Phase II testing measures that are warranted, including time and cost estimates.

4.10 If it becomes necessary in the performance of the work and services, the Contractor will, at no cost to the Government, secure the rights of ingress and egress on properties not owned or controlled by the Government. The Contractor will secure the consent of the owner, or the owner's representative or agent, in writing prior to effecting entry on such property. If requested, a letter of introduction signed by the District Engineer can be provided to explain the project purposes and request the cooperation of landowners. Where a landowner denies permission for survey, the Contractor must immediately notify the Contracting Officer's representative and must describe the extent of the property to be excluded from the survey.

4.11 The Contractor will return all surveyed areas as closely as practical to pre-survey conditions.

4.12 The Contractor must keep standard records that include field notes and maps, site survey forms, subsurface testing forms, and photographs.

4.13 State site forms will be prepared for all sites discovered during the survey, and records on previously reported sites will be updated if new information is obtained. Data should be included on the present condition of each site and on the contents and locations of any collections from it. The Contractor will also submit all site forms and updates to the appropriate State agency.

4.14 Cultural materials and associated records from the study should be curated at an institution that can ensure their preservation and make them available for research and public view. Curation should be within the State, and as close as possible to the project area. The Contractor will be responsible for making curatorial arrangements, coordinating them with the appropriate officials of North Dakota, and obtaining approval from the Contracting Officer's representative.

5.00 GENERAL REPORT REQUIREMENTS

5.01 The Contractor will submit the following documents, described in this section and Section 6.00: a field report, field notes, a draft contract report, and a final contract report.

5.02 The Contractor's field report will be a brief summary of the nature, extent, and results of the field work conducted. It may be in the form of a letter to the Contracting Officer's representative.

5.03 The Contractor's field notes will include legible copies of important notes and records kept during the investigation. Especially important are the daily field journal of the Principal Investigator or field director, field site survey forms, and subsurface testing forms. One copy of these notes should be submitted to the Contracting Officer's representative with the draft contract report but should not be bound into the report.

5.04 The draft contract report will detail the approach, methods, and results of the investigation and make recommendations for further work. It will be submitted to the Contracting Officer's representative, who will review it and forward it to other appropriate agencies for review. Comments will be returned to the Contractor, who will make the necessary revisions and submit the final contract report.

5.05 The Contractor's draft and final reports will include the following sections, as appropriate to the study. The length of each section depends on the level of detail required of the study and the amount of information available. The reports should be as concise as possible, yet provide all the information needed for evaluating and managing the project and for future reference.

a. Title page: The title page will provide the following information: the type of study; the types of cultural resources assessed (archeological, historical, and architectural); the project name and location (county and State); the date of the report; the Contractor's name; the contract number; the name of the author(s) and/or Principal Investigator; the signature of the Principal Investigator; and the agency for which the report is being prepared.

b. Management summary: This section will provide a concise summary of the study, containing all the information needed for management of the project. This information will include the reason the work was undertaken, who the sponsor was, a brief summary of the scope of work and budget, a

summary of the field work and lab analysis, the limitations of the study, the results, the significance of the results, recommendations for further work, and the repository for records and artifacts.

c. Table of contents

d. List of figures

e. List of plates

f. Introduction: This section will identify the sponsors (Corps of Engineers) and their reason for the study and present an overview of the study with each site located on USGS quad maps. It will also define the location and boundaries of the study area (using regional and area-specific maps); define the study area within its regional cultural and environmental context; reference the scope of work; identify the institution that did the work and the number of people and person-days/hours involved; give the dates when the various phases of the work were completed; identify the repository of records and artifacts; and provide a brief outline of the report and an overview of its major goals.

g. Previous archeological and historical studies: This section will briefly summarize and evaluate previous archeological and historical research in the study area, including the researchers, dates, extent, adequacy, and results of past work and any cultural/behavioral inferences derived from it.

h. Environmental background: This section will briefly describe the current and prehistoric environment of the study area, including its geology, vegetation, fauna, climate, topography, physiography, and soils. The relationship of the environmental setting to the area's prehistory and history should be stressed. The level of detail in this section will be commensurate with that of the other report sections.

i. Theoretical and methodological overview: This section will state the goals of the sponsor and the researcher, the theoretical and methodological orientation of the study, and the research strategies that were applied to achieve the goals.

j. Field methods: This section will describe all field methods, techniques, and strategies and the reasons for using them. It will also describe field conditions, relevant topographic/physiographic features, vegetation conditions, soil types, stratigraphy, general survey results, and the reasons for eliminating any uninvestigated areas.

k. Laboratory and analysis methods: This section will explain the laboratory methods employed and the reasons for selecting them. It will reference accession or catalog numbers of any collections, photographs, or field notes obtained during the study and state where these materials are permanently housed. It will also describe and justify the specific analytical methods used, including any quantitative analysis of the data, and discuss limitations or problems with the analysis.

l. Results: This section will describe all cultural resources found during the study. It will minimally include each site's description (including size, depth, and artifact density); its location (USGS quad, legal description, elevation, and address if appropriate); the amounts and types of remains recovered; its environmental setting; its current condition; the direct and indirect impacts of the project upon it; and any additional interpretations (e.g., site type, cultural components, and human behavioral information).

m. Evaluation and conclusions: This section will formulate conclusions about the location, size, condition, and distribution of the resources found; their relationships to other sites in the area; and their possible importance in terms of local and regional prehistory, protohistory, and history. It will also relate the results of the study to the stated goals; identify any changes in the goals; assess the reliability of the analysis; and discuss the potential of and goals for future research.

n. Recommendations: This section will recommend any further work deemed necessary. It will summarize Phase II evaluation measures that would be needed to determine whether specific resources are eligible for the National Register of Historic Places, as well as a time and cost estimate for this work. It will also describe any areas that were inaccessible and recommend future treatment of them. If the Contractor concludes that no further work is needed at any site, the evidence and reasoning supporting this recommendation will be presented.

o. References: This section will provide bibliographic references (in American Antiquity format) for every publication cited in the report. References not cited in the report may be listed in a separate "Additional References" section.

p. Appendix: This section will include the Scope of Work, resumes of project personnel, copies of all correspondence relating to the study, and any other pertinent information referenced in the text. It will also include State site forms for all sites identified during the survey, including find spots and previously recorded sites.

q. Figures: The location of all sites and other features discussed in the text will be shown on a legibly photocopied USGS map bound into the report. In addition, the locations of all subsurface tests will be indicated on maps of appropriate scale and detail and keyed to the subsurface testing forms included with the field notes. Other recommended figures are regional and project maps, photographs of the project area, and line drawings or photographs of diagnostic artifacts, structures, and unit or feature profiles.

r. Tables: The report should include tables of cultural materials by site and provenience (for example, excavation unit and level). Information that may require more detailed tabulation includes lithic tool types and raw materials, ceramic attributes, and floral and faunal remains.

5.06 A cover letter submitted with the final contract report will include the project budget.

5.07 The Contractor will submit to the Contracting Officer's representative the negatives for all photographs that appear in the final report.

6.00 REPORT FORMATS

6.01 There are no specific format requirements for the field report. A letter report is usually sufficient.

6.02 There are no format requirements for the field notes; however, they must be legible. If the original handwritten notes are illegible, they should be typed.

6.03 Formats for both the draft and final contract reports are as follows:

a. The Contractor will present information in whatever textual, tabular, or graphic forms are most effective for communicating it.

b. The draft and final reports will be divided into easily discernible chapters, with appropriate page separations and headings.

c. The report text will be typed, single-spaced (the draft report should be space-and-one-half or double-spaced), on good quality bond paper, 8.5 inches by 11.0 inches, with 1.5-inch binding and bottom margins and 1-inch top and outer margins, and may be printed on both sides of the paper. All pages will be numbered consecutively, including plates, figures, tables, and appendices.

d. All illustrations must be clear, legible, self-explanatory, and of sufficiently high quality to be reproduced easily by standard xerographic equipment, and will have margins as defined above. All maps must be labeled with a caption/description, a north arrow, a scale bar, township and range, map size and dates, and map source (e.g., the USGS quad name or published source). All photographs or drawings should be clear, distinct prints or copies with captions and a bar scale.

7.00 MATERIALS PROVIDED

7.01 The Contracting Officer's representative will furnish the Contractor with access to any publications, records, maps, or photographs that are on file at the St. Paul District headquarters.

8.00 SUBMITTALS

8.01 The field work completion date for this project will be as early as possible in the spring of 1986 and no later than May 15, 1986. The Contractor will contact the Contracting Officer's representative at least 7 days before the field work begins to discuss the work schedule and plans.

8.02 The Contractor will submit reports according to the following schedules:

a. Field report: A brief letter report summarizing the field work and its results will be submitted to the Corps of Engineers within 15 days of the completion of the field work, and no later than May 31, 1986.

b. Draft contract report: Seven copies of the draft contract report will be submitted no later than 45 days after completion of the field work. The draft contract report will be reviewed by the Corps of Engineers, the State Historic Preservation Officer, the State Archeologist, and the National Park Service. The draft contract report will be submitted according to the report and contract specifications outlined in this scope of work.

c. Project field notes: One legible copy of all the project field notes will be submitted with the draft contract report.

d. Final contract report: The original and 15 copies of the final report will be submitted 60 days after the Contractor receives the Corps of Engineers comments on the draft report. The final report will incorporate all the comments made on the draft report.

9.00 CONDITIONS

9.01 Failure of the Contractor to fulfill the requirements of this Scope of Work will result in rejection of the Contractor's report and/or termination of the contract.

9.02 Neither the Contractor nor his representative shall release any sketch, photograph, report, or other materials of any nature obtained or prepared under the contract without specific written approval of the Contracting Officer's representative prior to the acceptance of the final report by the Government. Dissemination of survey results through papers at professional meetings and publication in professional journals is encouraged. However, professional discretion should be used in releasing information on site locations where publication could result in damage to cultural resources.

9.03 All materials, documents, collections, notes, forms, maps, etc., that have been produced or acquired in any manner for use in the completion of this contract shall be made available to the Contracting Officer's representative upon request.

9.04 Principal investigators will be responsible for the validity of material presented in their reports. In the event of controversy or court challenge, the principal investigator(s) will be placed under separate contract to testify on behalf of the Government in support of the findings presented in their reports.

9.05 The Contractor will be responsible for adhering to all State laws and procedures regarding the treatment and disposition of human skeletal remains. Any human remains recovered will be treated with respect and will not be placed on public display.

10.00 METHOD OF PAYMENT

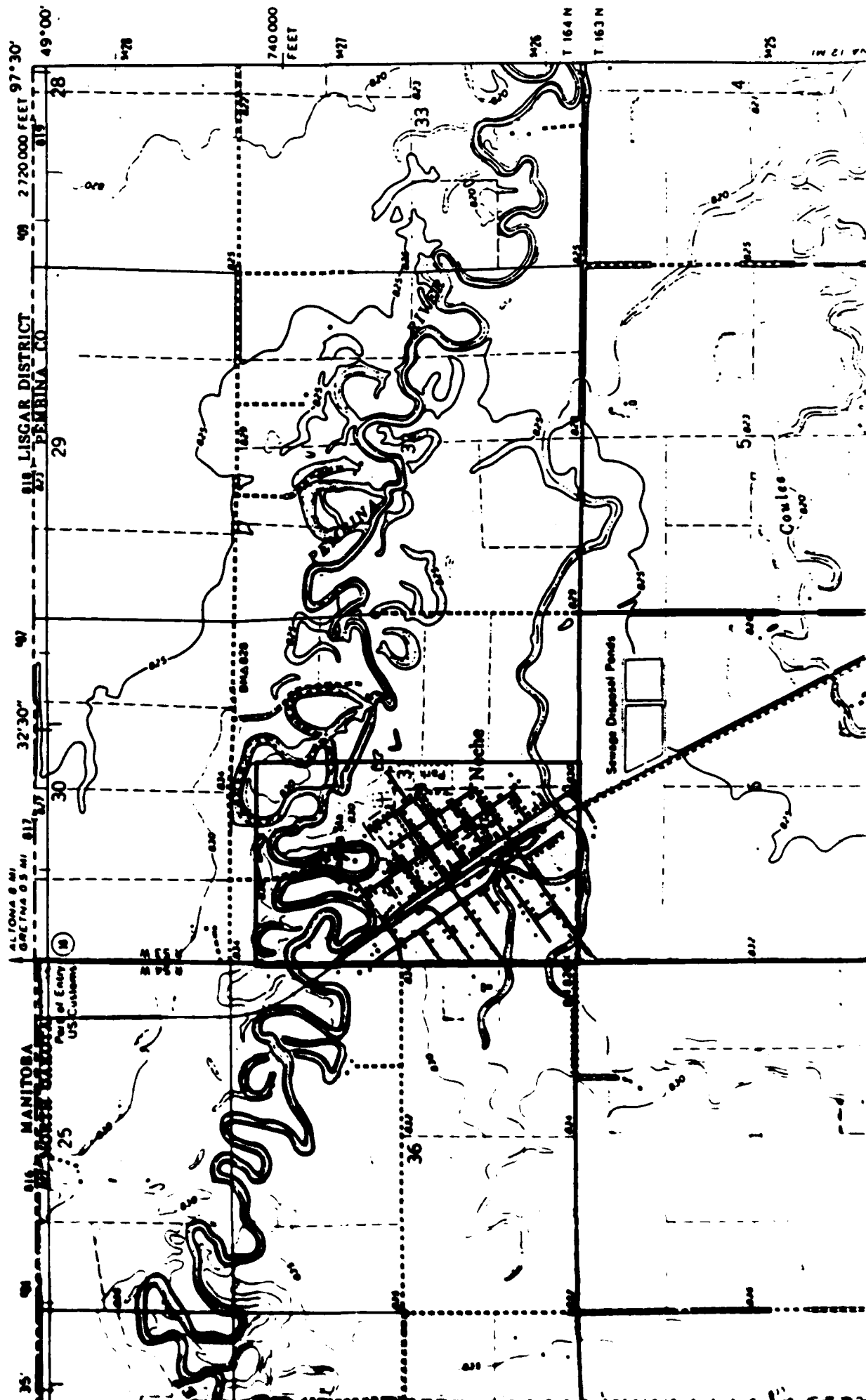
10.01 The Contractor will make monthly requests for partial payment on ENG Form 93 under this fixed price contract. A 10-percent retained percentage will be withheld from each partial payment. Final payment, including the previously retained percentage, will be made to the Contractor upon approval of the final report by the Contracting Officer's representative.

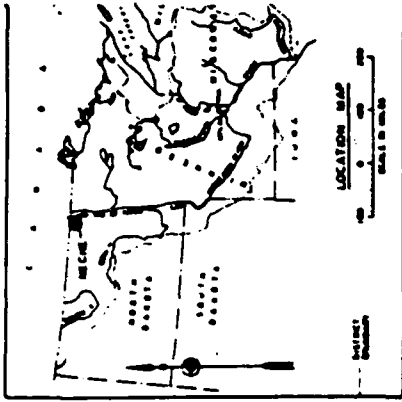
NECHE QUADRANGLE

NORTH DAKOTA

7.5 MINUTE SERIES (TOPOGRAPHIC)

NE 1/4 CAVALIER 15' QUADRANGLE



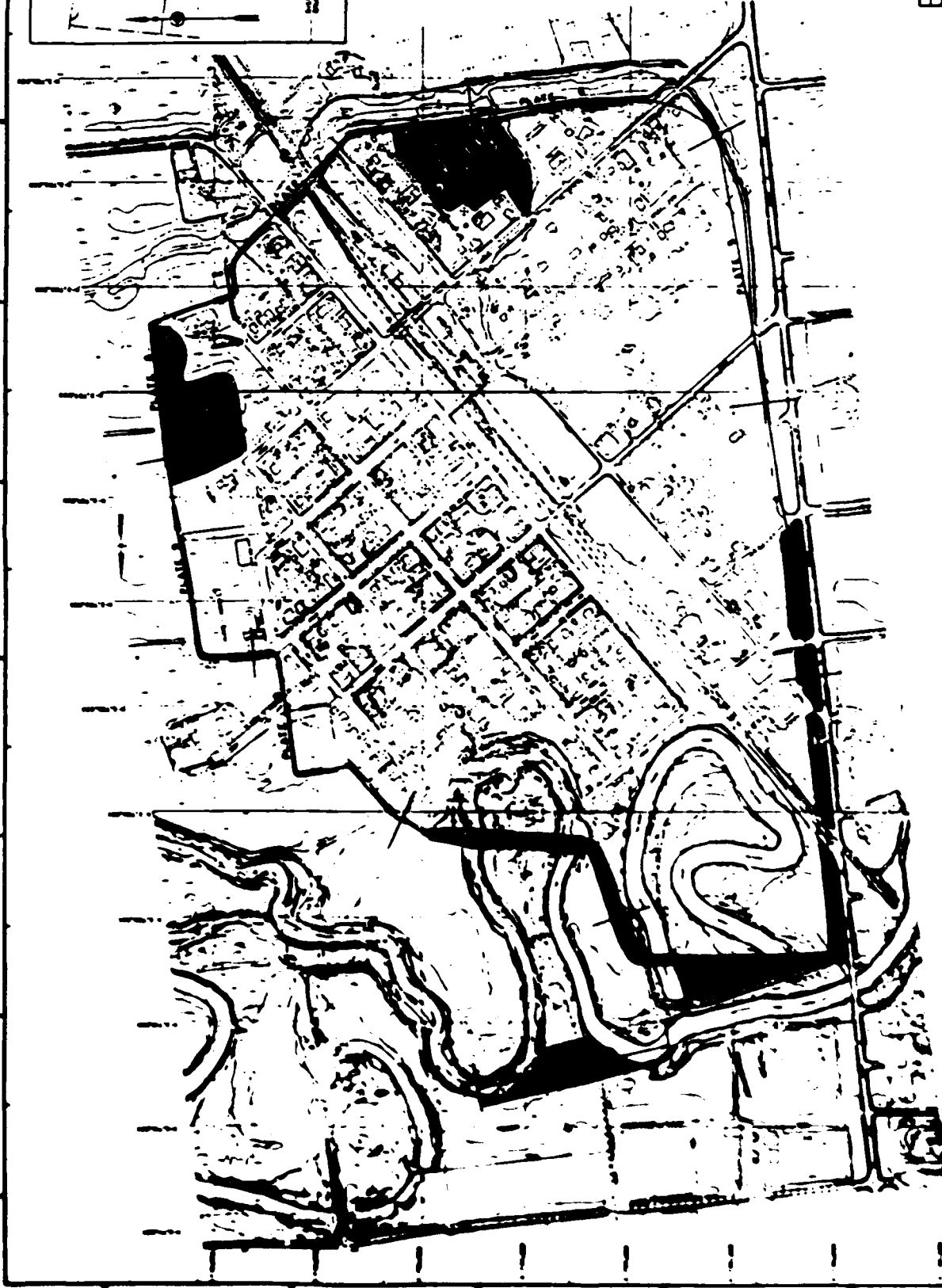


DATE	REVISION	DESCRIPTION
1	1	INITIAL PROJECT LOCATION MAP
2	2	REVISION 1: ADDED NEW DATA
3	3	REVISION 2: ADDED NEW DATA
4	4	REVISION 3: ADDED NEW DATA
5	5	REVISION 4: ADDED NEW DATA
6	6	REVISION 5: ADDED NEW DATA
7	7	REVISION 6: ADDED NEW DATA
8	8	REVISION 7: ADDED NEW DATA
9	9	REVISION 8: ADDED NEW DATA
10	10	REVISION 9: ADDED NEW DATA
11	11	REVISION 10: ADDED NEW DATA
12	12	REVISION 11: ADDED NEW DATA
13	13	REVISION 12: ADDED NEW DATA
14	14	REVISION 13: ADDED NEW DATA
15	15	REVISION 14: ADDED NEW DATA
16	16	REVISION 15: ADDED NEW DATA
17	17	REVISION 16: ADDED NEW DATA
18	18	REVISION 17: ADDED NEW DATA
19	19	REVISION 18: ADDED NEW DATA
20	20	REVISION 19: ADDED NEW DATA
21	21	REVISION 20: ADDED NEW DATA

PROJECT LOCATION MAP	
DATE	10/1/77
BY	J. J. J.
CHECKED BY	J. J. J.
APPROVED BY	J. J. J.
INDEX & PROJECT LOCATION MAP	
DATE	10/1/77
BY	J. J. J.
CHECKED BY	J. J. J.
APPROVED BY	J. J. J.



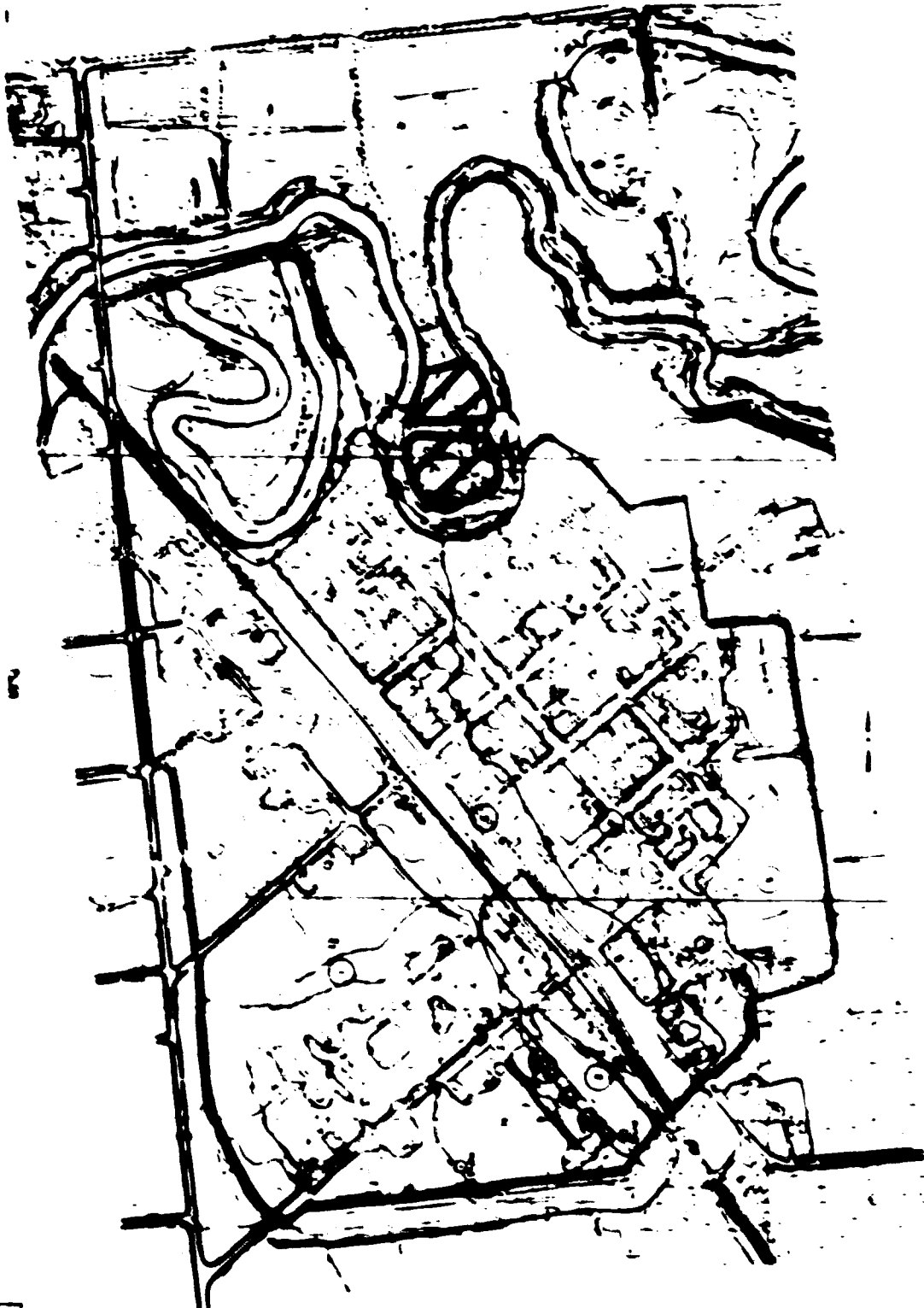
PROJECT LOCATION MAP



**MODIFICATION TO SCOPE OF WORK FOR
PHASE I CULTURAL RESOURCES INVESTIGATION
OF NECHE FLOOD CONTROL PROJECT AREA**

After the contract was awarded for a Phase I cultural resources survey of the Neche flood control project area, a potential source of fill was identified that will necessitate additional surveying. Accordingly, the scope of work for the existing contract (DACW37-86-M-0828) is to be modified through the following additions:

1. The Contractor will undertake a Phase I cultural resources survey of the potential source of fill marked in figure 1. The field and analysis methods used will be those outlined in the previous scope of work. Particular attention will be paid to the identification of any deeply buried cultural deposits that may be present in this area, through the use of techniques including shovel testing supplemented by deep coring.
2. The results of this additional surveying will be incorporated into the draft and final reports outlined in the existing scope of work.
3. The schedule for completion of the field work, submission of the letter report summarizing the field work, and submission of the draft and final reports remain unaltered.



additional
survey area

LANDS BELONGING
TO THE GOVERNMENT
OF THE DISTRICT OF COLUMBIA
AND TO THE DISTRICT OF COLUMBIA
AND TO THE DISTRICT OF COLUMBIA

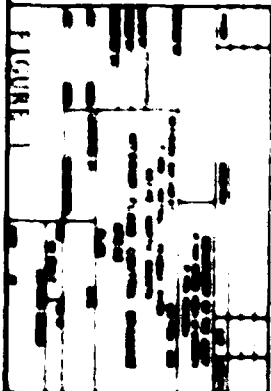


FIGURE 1

APPENDIX C:

Vitae



Powers Elevation, Inc.

OIL WELL ELEVATIONS LOCATIONS
ENVIRONMENTAL ARCHAEOLOGICAL SERVICES
PO Box 2812
Denver, Colorado 80201-2812
Phone 303 321 2217
Toll Free 1 800 824 2550

MERVIN G. FLOODMAN

VITA

PRESENT PROFESSIONAL STATUS

District Archaeologist - Williston/Dickinson,
North Dakota District Archaeology Department,
Powers Elevation. District Telephone numbers
(701) 774-0679; (701) 572-3608.

EDUCATION

B.A. Anthropology and History, 1975, Saint
Cloud State University.
M.A., Anthropology, 1981, University of Northern
Colorado.

PROFESSIONAL EXPERIENCE

- 1981 - Present District Archaeologist - Williston, North Dakota
District Office, Powers Elevation.
- 1980 - 1981 Field Archaeologist - Williston, North Dakota
District Office, Powers Elevation.
- 1980 Field Assistant - Archaeological Services, stationed
in Grand Junction, Colorado.

FIELD WORK

- 1981 - 1985 As Powers Elevation District Archaeologist served
as Lead Field Investigator for over 400 cultural
resources jobs in Montana, South Dakota, and
North Dakota.
- 1984 Principal Investigator and Project Archaeologist
on archaeological test excavations at sites 32MZ173
and 32MZ233, McKenzie County, North Dakota, by
Powers Elevation for Texaco, Inc.
- 1983 - 1984 Project Archaeologist on the archaeological testing
program on the Upper Souris River, North Dakota,
by Powers Elevation for the U.S. Army Corps of
Engineers, St. Paul District.
- 1983 Principal Investigator and Project Archaeologist
on the survey of the McKenzie County Gathering
System, North Dakota, by Powers Elevation for
Getty Trading and Transportation Company.

FIELD WORK, (CONTINUED)

- 1983 Principal Investigator and Project Archaeologist on the Charlson Oil Field Block Surveys, McKenzie County, North Dakota, by Powers Elevation for Texaco, Inc.
- 1983 Principal Investigator and Project Archaeologist on the archaeological test excavations at sites 32MZ46 and 32MZ685, McKenzie County, North Dakota, by Powers Elevation for Tom Brown, Inc.
- 1983 Principal Investigator and Project Archaeologist on the block survey, Billings County, North Dakota, by Powers Elevation for Donald C. Slawson Oil Company.
- 1983 Project Archaeologist on the survey of the Rocky Butte federal coal lease tract, Campbell County, Wyoming, by Powers Elevation for Texas Energy Services, Inc.
- 1982 - 1983 Principal Investigator and Project Archaeologist on the block survey, Billings County, North Dakota, by Powers Elevation for Ladd Petroleum Corporation.
- 1982 Project Archaeologist on the cultural resources survey of the Lake Darling-Souris River Project, North Dakota, by Powers Elevation for the U.S. Army Corps of Engineers, St. Paul District.
- 1982 Project Archaeologist on the archaeological excavations at sites 32MZ333 and 32MZ334, McKenzie County, North Dakota, by Powers Elevation for Abraxas Petroleum Company.
- 1981 Project Archaeologist on the survey of the Little Missouri Pipeline, Golden Valley and Billings County, North Dakota, by Powers Elevation for Wesco.
- 1981 Project Archaeologist on the block survey, McKenzie County, North Dakota, by Powers Elevation for Patrick Petroleum Corporation.

FIELD WORK, (CONTINUED)

- 1981 Project Archaeologist on the archaeological testing of sites 32OL417-418, 32OL9, 32OL11, and 32OL421, Oliver County, North Dakota, by Powers Elevation for the Oliver County Commissioners.
- 1981 Project Archaeologist on the Lone Butte surveys, McKenzie County, North Dakota, by Powers Elevation for Gulf Oil Corporation.
- 1979 Crew Member on survey, testing and excavation at the John Redmond Reservoir, conducted by the Kansas State Historical Society.
- 1978 Crew Member on survey and testing for proposed changes in the Great River Road in Aitkin County, Minnesota.
- 1978 Crew Member for excavation at the Rainbow site on the Held Creek Watershed Project, Marion County in Northwestern Iowa for Luther College, Decorah, Iowa.
- 1977 Crew Member on survey and testing of sites at the proposed YellowSmoke State Park, Dennison, Iowa for the Iowa State Archaeologist's Office.
- 1976 Crew Member on survey and testing of sites at Elk Rock State Park, Red Rock Reservoir, Marion County, Iowa, conducted by Iowa State University.
- 1975 - 1977 Crew Member on site survey and excavation work at Saylorville Reservoir by Iowa State University.
- 1974 Attended a ten-week field school run by St. Cloud State University and the Minnesota Historical Society.

SELECTED PUBLICATIONS

- 1981a Oliver County Lewis and Clark Trail Testing Addendum: Continued Testing at 32OL417/481 (Badcurve Site), 32OL9 (Smith Farm Village Site), 32OL11 (Lower Sanger Village Site), and 32OL421 (Black Water Site). Powers Elevation, Denver. Report to Oliver County Commissioners.
- 1981b Lewis and Clark Trail Site 32OL258 Testing. Powers Elevation, Denver. Report to Oliver County Commissioners.
- 1981c Blacktail Federal 1-4 Alternat Access Shovel Testing Program at Sites 32BI298 and 32BI299. Powers Elevation, Denver. Report to Patrick Petroleum Corporation.
- 1981d Addendum to Letec Al Aquitaine 2-12: Shovel Testing Report. Powers Elevation, Denver. Report to Letec.
- 1981e Patrick Petroleum Block Survey, Sections 20, 21, 29, and 30, T.145N., R.98W., McKenzie county, North Dakota. Powers Elevation, Denver. Report to Patrick Petroleum Corporation.
- 1981f Little Missouri Pipeline Survey. Powers Elevation, Denver. Report to Wesco.
- 1981g Federal 4-25-4A Access Road Survey. Powers Elevation, Denver. Report to Gulf Oil Corporation.
- 1982a Patrick Petroleum Harris Federal 1-30, Testing Program at Site 32GV52. Powers Elevation, Denver. Report to Patrick Petroleum Corporation.
- 1982b Patrick Petroleum 320 Acre Block Survey, Section 20, T.113N., R.100W., Billings County, North Dakota. Powers Elevation, Denver. Report to Patrick Petroleum Corporation.
- 1983a Ulteig Engineers, Inc., Testing of Elkhorn Substation, Site 32BI356, Billings County, North Dakota. Powers Elevation, Denver. Report to Ulteig Engineers, Inc.
- 1983b Getty Trading and Transportation Company McKenzie County Gathering System, McKenzie County, North Dakota. Powers Elevation, Denver. Report to Getty Trading and Transportation Company.

- 1983c Texaco, Inc., Block Survey, N1/2 Section 14, T.153N., R.95W., McKenzie County, North Dakota. Powers Elevation, Denver. Report to Texaco, Inc.
- 1983d Texaco, Inc., Block Survey, Sections 17 and 18, T.153N., R.95W., McKenzie County, North Dakota. Powers Elevation, Denver. Report to Texaco, Inc.
- 1983e Ladd Petroleum Block Survey, W1/2 Section 5, T.144N., R.100W., Billings County, North Dakota. Powers Elevation, Denver. Report to Ladd Petroleum Corporation.
- 1983f The Abraxas Project: Archaeological Mitigation at Sites 32MZ333 and 32MZ334. Co-authored with Marcia J. Tate and Robert A. Williams. Cultural Resources Report No. 9, USDA Forest Service, Northern Region, Missoula.
- 1983g Viegel Engineering, Sentinel Butte Step I Facility, Report of Testing at Site 32GV32, Golden Valley County, North Dakota. Powers Elevation, Denver. Report to Viegel Engineering.
- 1983h A Cultural Resources Inventory of Portions of the Texas Energy Services, Inc. Rocky Butte Coal Mine Lease Tract, Campbell County, Wyoming. Co-authored with Paul D. Friedman. Powers Elevation, Denver. Report to Texas Energy Services, Inc.
- 1984a Tom Brown, Inc. Federal 19-42 Access Road Archaeological Testing at Sites 32MZ46 and 32MZ685, McKenzie County, North Dakota. Powers Elevation, Denver. Report to Tom, Brown, Inc.
- 1984b Texaco, Inc. Silurian Unit 40, 400 Acre Block Survey, McKenzie County, North Dakota. Powers Elevation, Denver. Report to Texaco, Inc.
- 1984c Report of the Initial Archaeological Testing Program at Stone Circle Site 32MZ174 at the Texaco, Inc. Silurian Unit #35 Well Pad, McKenzie County, North Dakota. Powers Elevation, Denver. Report to Texaco, Inc.

SELECTED PUBLICATIONS, (CONTINUED)

- 1984d Donald C. Slawson Oil Company, Final Report of the Blount Survey of Approximately 1,360 Acres in Section 1, T.140N., R.101W., and Sections 6, 7 and 8, T.140N., R.100W., Billings County, North Dakota. Powers Elevation, Denver. Report to Donald C. Slawson Oil Company.
- 1985a Milestone Petroleum, Inc., Preliminary Report, Archaeological Testing, Site 32MZ714, at the Proposed 34-19 Federal Well Pad Location, McKenzie County, North Dakota. Powers Elevation, Denver. Report to Milestone Petroleum.
- 1985b Final Report of the 1982 Cultural Resources Survey of the Lake Darling-Souris River Project, North Dakota. Co-authored with Paul D. Friedland and Kurt P. Schweigert. Powers Elevation, Denver. Report to the U.S. Army Corps of Engineers, St. Paul District.
- 1985c Archaeological Investigations at 32MZ173 and 32MZ233 in the Carlson Oil Field, Northeastern McKenzie County, North Dakota. Powers Elevation, Denver. Report to Texaco, Inc.

STATE
EXPERIENCE

North Dakota, South Dakota, Montana, Wyoming,
Colorado, Kansas, Iowa, and Minnesota.

MEMBERSHIP IN
PROFESSIONAL
ORGANIZATIONS

Plains Anthropological Association
North Dakota Archaeological Association
Professional Council of North Dakota Heritage
Colorado Archaeological Society

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